



# THE VETERINARY BULLETIN

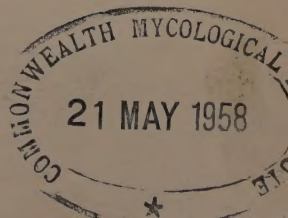
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COMMONWEALTH BUREAU OF ANIMAL HEALTH  
WEYBRIDGE, SURREY  
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THE VETERINARY  
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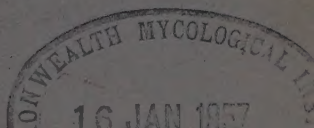
# THE VETERINARY BULLETIN

COMPILED FROM WORLD LITERATURE



*Prepared by the*  
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THE  
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[No. 1]

## DISEASES CAUSED BY BACTERIA AND FUNGI

ROUNTREE, P. M., FREEMAN, B. M. & JOHNSTON, K. G. (1956). Nasal carriage of *Staphylococcus aureus* by various domestic and laboratory animals.—*J. Path. Bact.* **72**, 319-321. [Authors' summary modified.] 1

Nasal swabs from a number of domestic and laboratory animals have been examined for *Staph. aureus*. Nasal carriage was found in nasal swabs in a large proportion of g. pigs and monkeys, in a small proportion of dogs, and in one horse, but not in sheep, laboratory rabbits nor in cows, either healthy or affected with staphylococcal mastitis. In their phage patterns, the majority of staphylococci isolated resembled those isolated from human subjects.

RICHOU, R., GUILHON, J. & BOUSICAUX, A. (1956). Recherches sur les staphylocoques responsables des staphylococcies cutanées du chien. [Study of staphylococci responsible for skin diseases in dogs.] — *Rec. Méd. vet.* **132**, 599-604. 2

Of 41 strains of staphylococci isolated from skin lesions in dogs 34 were pathogenic. Their fermentation properties were similar to those of strains isolated from human subjects and some also produced fibrinolysins—possibly because the infection in dogs had been contracted from man. Haemolytic strains were obtained for the preparation of toxoid. The strains under study were susceptible to antibiotics, especially streptomycin and chloramphenicol.

—T.E.G.R.

ENGLISH, A. R., MCBRIDE, T. J., VAN HALSEMA, G. & CARLOZZI, M. (1956). Biologic studies on PA 775, a combination of tetracycline and oleandomycin with synergistic activity. — *Antibiot. & Chemother.* **6**, 511-522. [Spanish summary: p. 530. Authors' summary modified.] 3

Studies on PA775 (67% tetracycline base and 33% oleandomycin base) demonstrated: (1) synergic activity *in vitro* against selected

micro-organisms, including antibiotic-resistant strains; (2) marked ability to retard the emergence of antibiotic-resistant variants of *Staphylococcus aureus* and *Streptococcus pyogenes*; (3) statistically significant synergic activity in mice, even when infected with the antibiotic-resistant variants of these organisms.

DAVIES, M. E. & SKULSKI, G. (1956). A study of beta-haemolytic streptococci in the fading puppy in relation to canine virus hepatitis infection in the dam.—*Brit. vet. J.* **112**, 404-416. 4

Carcasses of puppies were examined for beta-haemolytic streptococci and canine hepatitis virus. Results were inconclusive and the role of the organisms (singly or in combination) in neo-natal mortality could not be ascertained.

—T.E.G.R.

WIDDICOMBE, J. G., HUGHES, R. & MAY, A. J. (1956). The rôle of the lymphatic system in the pathogenesis of anthrax.—*Brit. J. exp. Path.* **37**, 343-349. [Abst. from survey of paper (p. i).] 5

Rabbits were inoculated with *B. anthracis*, the lymph vessels draining the site were cannulated and quantitative cultures were made from the lymph so obtained. The findings suggested that multiplication of the bacilli occurs in lymph nodes, and that the eventual discharge of these bacilli is the cause of the terminal bacteraemia.

SMITH, H., ZWARTOUW, H. T. & HARRIS-SMITH, P. W. (1956). The chemical basis of the virulence of *Bacillus anthracis*. VIII. Fractionation of the intracellular material of *Bacillus anthracis*.—*Brit. J. exp. Path.* **37**, 361-371. [Abst. from authors' summary.] 6

Aggressins were isolated from *B. anthracis* grown *in vivo*—one from the capsular polyglutamic acid and another from the protein fraction, the latter possibly having anti-phagocytic action at the surface on the capsulated organism. The aggressive activity of *B. anthracis* is discussed.



ZWARTOUW, H. T. & SMITH, H. (1956). **Non-identity of the phospholipase of *Bacillus anthracis* with the anthrax toxin.** — *J. gen. Microbiol.* **15**, 261-265. [Authors' summary modified.] 7

Filtrates from suitable cultures of *B. anthracis* contained a phospholipase which slowly hydrolysed the phospholipid in egg-yolk broth but had no action on free egg-lecithin. This enzyme did not appear to be the anthrax toxin.

ROTH, N. G., WOLFE, V. L. & MARCUS, L. (1956). **Studies on the plasmodesm-like linkage between spores of *Bacillus anthracis*.** — *J. Bact.* **72**, 344-348. [Authors' summary modified.] 8

Electron microscope studies indicated that spores of fully-autolysed cultures of *B. anthracis*, *B. cereus*, and *B. mycoides* were connected by a plasmodesm-like linkage. The linkage between spores of *B. anthracis* could not be broken mechanically by sonic vibration or blending with glass beads unless the spore coat also was ruptured. Immediately after germination of the spores, the connection no longer existed. However, pairs of free spore coats which had apparently been shed by the germinating spores were observed to be linked. Evidence indicates that the linkage is an extension of the spore coat. The term "plasmodesmoid," meaning resembling a plasmodesm, is suggested for this linkage.

SCHLINGHAM, A. S., DEVLIN, H. B., WRIGHT, G. G., MAINE, R. J. & MANNING, M. C. (1956). **Immunizing activity of alum-precipitated protective antigen of *Bacillus anthracis* in cattle, sheep and swine.** — *Amer. J. vet. Res.* **17**, 256-261. 9

Antigen was administered to cattle, sheep and pigs which were subsequently challenged—by oral administration of 150 million spores in cattle, by s/c injection of 20,000 spores in sheep, and by various routes (including the feeding of infected carcasses of g. pigs) in pigs. A resistance to challenge was observed in cattle and sheep one month and 5 months after inoculation; it declined after 8-12 months.

—T.E.G.R.

DARLOW, H. M., BELTON, F. C. & HENDERSON, D. W. (1956). **The use of anthrax antigens to immunise man and monkey.** — *Lancet.* **271**, 476-479. [Authors' summary modified.] 10  
1057 doses of alum-precipitated anthrax antigen were administered s/c to 373 people. Reactions were mild but tended to increase in frequency but not in severity with successive

doses given in the form of an "annual booster". The incidence of febrile reactions was very low (0.19%). There was no incapacitation for work. A reaction after one dose did not necessarily predispose to subsequent reactions. There was no evidence of any connexion between the severity of reaction and the site of inoculation relative to previous injections. I/d tests in immunized people suggested that the reactions were allergic and were associated with the antigen and not with impurities in the vaccine. Antibodies neutralising anthrax toxin were demonstrable in the blood of 90 out of 91 immunized people. No relationship was demonstrated between the antibody level and reaction to inoculation. Tests on monkeys suggested that the immunization procedure used for man was effective, particularly when demonstrable circulating antibody was present. Two injections of antigen protected monkeys for at least one and probably nearer two years. There is evidence that the antigen remains potent after storage for at least 2½ years.

KRIEGLSTEINER, B. (1955). **Vergleichende Untersuchungen über die Wirksamkeit von Formaldehyd-Aerosol und Formaldehyd-Sprühdesinfektion in tb.-verseuchten Ställen. [Disinfection of TB.-infected byres with formaldehyde as an aerosol and as a spray.]** — *Inaug. Diss., Munich.* pp. 124. 11

Spraying with formaldehyde was recommended for the disinfection of byres in which tuberculous cattle had been housed. Spraying was considered more satisfactory than aerosols. Disinfection should always be followed by the neutralization of formaldehyde by ammonia.

—E.G.

WALLACE, A. T. & WEBBER, W. J. (1956). **Sensitivity of *Mycobacterium tuberculosis* (bovine type) to PAS.** — *Tubercle, Lond.* **37**, 358-360. [Authors' summary modified.] 12

Of 90 strains of bovine type *M. tuberculosis*, sensitive to streptomycin and isoniazid, which were tested on solid medium (Löwenstein-Jensen) for sensitivity to p-aminosalicylic acid, 39 were sensitive, 36 were slightly resistant, and 15 were decidedly resistant to the drug.

ANON. (1956). **The destruction of tubercle bacilli in milk by high temperature short time pasteurization.** — *Mon. Bull. Minist. Hlth Lab. Serv.* **15**, 232-237. [Summary modified.] 13

During the years 1949 to 1952 an investigation was made by 22 public health laboratories in England and Wales into the presence of



tubercle bacilli in pasteurized milk treated by the holder and by the high temperature short time (H.T.S.T.) methods.

Of milk samples treated by the holder method, 8 out of 201 giving a positive phosphatase reaction produced TB. on injection into g. pigs; none out of 524 giving a negative phosphatase reaction did so. Of samples treated by the H.T.S.T. method, 2 out of 93 phosphatase-positive samples gave rise to TB. in g. pigs, but there is reason to believe that these two were raw milks sampled in error. Of 3,507 phosphatase-negative samples, one was shown to contain tubercle bacilli that were apparently derived from a filling machine used for tuberculous raw milk, and one gave rise to minimal lesions in the g. pig which were reported at the time to be tuberculous, but which subsequent examination showed to be almost certainly not due to the tubercle bacillus.

Since only a very small proportion of phosphatase-negative samples were injected into g. pigs, the figures recorded in this paper cannot be used for calculating the real incidence of tubercle bacilli in pasteurized milk. They can, however, be used for comparing the efficacy of these two methods of pasteurization. They show that 8 out of 725 (1.1%) holder-treated and 1 out of 3,600 (0.03%) H.T.S.T.-treated milks contained tubercle bacilli. It is concluded that the H.T.S.T. method is the more satisfactory. Nevertheless samples of milk reacting positively to the phosphatase test occur sufficiently often to justify more stringent control of pasteurization, particularly in the smaller plants, by the sanitary authorities.

SIEBERT, F. B. (1956). **The significance of antigen-antibody reactions in tuberculosis.**—*J. infect. Dis.* **99**, 76-83. [Author's summary slightly modified.] 14

Specific antibodies to tuberculo-protein and tuberculo-polysaccharide were found in serum of rabbits repeatedly sensitized with B.C.G. The antigen-antibody precipitate formed by adding tuberculo-polysaccharide to B.C.G. antiserum was completely soluble in excess polysaccharide. The antigen-antibody precipitate formed by adding tuberculo-protein to anti-protein serum was partially soluble in excess tuberculo-protein, in excess polysaccharide, and also in 20% saline. The simultaneous presence of both specific antibodies and specific antigens was found in tuberculous caseous lungs and in other caseous material. Fractions were isolated from two tuberculous lungs and other caseous material which were insoluble in 0.9% saline but soluble in 20% saline. These fractions were shown to

contain specific antigen-antibody complexes, since they were partially soluble in antigen excess. It is suggested that such complexes formed *in situ* in tuberculous tissues could be resolved when the antigen concentration reaches the region of antigen excess. Such resolution could occur more rapidly in animals in which the antibodies to polysaccharide are more abundant.

STÄHELIN, H., SUTER, E. & KARNOVSKY, M. L. (1956). **Studies on the interaction between phagocytes and tubercle bacilli. I. Observations on the metabolism of guinea pig leucocytes and the influence of phagocytosis.**—*J. exp. Med.* **104**, 121-136. 15

STÄHELIN, H., KARNOVSKY, M. L. & SUTER, E. (1956). **Studies on the interaction between phagocytes and tubercle bacilli. II. The action of phagocytes upon  $C^{14}$ -labelled tubercle bacilli.**—*Ibid.* 137-150. 16

I. The metabolism of polymorphonuclear leucocytes and of monocytes was investigated. Monocytes consumed more oxygen and produced more lactic acid than polymorphs. Metabolic activity differed with the proportion of the two types of cells in the cell suspension. Oxygen consumption was markedly reduced and lactic acid production increased when the atmospheric oxygen was decreased. Oxygen consumption, lactic acid production and viability of polymorphs were reduced by lowering the pH of the medium below 7.5; monocytes were less susceptible to changes in pH. During phagocytosis oxygen consumption of suspensions rich in polymorphs rose by 60% and that of suspensions rich in monocytes was nearly doubled; lactic acid production was unchanged.

II. Labelled organisms were exposed *in vitro* to leucocytes (mostly polymorphs) from peritoneal exudates of g. pigs. In the case of heat-killed organisms there was little or no conversion to  $C^{14}O_2$ , while there was significant conversion of sound-killed bacteria. After phagocytosis the living organisms maintained their rate of oxygen consumption and  $C^{14}O_2$  production. *Mycobact. phlei* and *B. subtilis* behaved differently—oxygen consumption and  $C^{14}O_2$  production decreased after phagocytosis and conversion to carbon dioxide was significant.

—T.E.G.R.

FONG, J., SCHNEIDER, P. & ELBERG, S. S. (1956). **Studies on tubercle bacillus-monocyte relationship. I. Quantitative analysis of effect of serum of animals vaccinated with BCG upon bacterium-monocyte system.**—*J. exp.*



*Med.* 104, 455-465. [Authors' summary modified.] 17

Studies of the conditions necessary for maintenance of constant cell populations *in vitro* in the Mackness type of culture chamber have indicated the importance of preliminary trypsinization of cells and the beneficial effect of 40% rabbit serum in Tyrode's solution. Under these optimal conditions, uninfected suspensions of monocytes exhibited little change in cell numbers over a period of 40 to 72 hours. Infection of monocytes with the virulent H37Rv strain of tubercle bacillus resulted in an early degeneration of a certain proportion of the cells cultivated in the presence of normal rabbit serum. This degeneration was apparent not only with cells of tuberculin-negative animals but also with those derived from tuberculin-positive animals. The serum of animals vaccinated with B.C.G. favoured the survival of monocytes infected with virulent tubercle bacilli. Treatment with this serum caused a delay in degeneration of infected normal cells (cells of tuberculin-negative rabbits) and a complete inhibition of degeneration of infected immune cells (cells of rabbits vaccinated with B.C.G.).

KANAI, K., TAKAHASHI, H., KATSUYAMA, S. & YANAGISAWA, K. (1955). Some aspects of isoniazid-resistant tubercle bacilli.—*Jap. J. med. Sci. Biol.* 8, 413-423. 18

Three strains of isoniazid-resistant tubercle bacilli grown on solid-egg medium, when injected subcutaneously, intravenously or intracerebrally into g. pigs, were more attenuated than another isoniazid-resistant strain grown on Kirchner's medium.—E.G.

HSIUNG, G. D. & HALEY, L. D. (1956). A modification of virulence of *Mycobacterium tuberculosis* by chick embryo adaptation.—*Amer. Rev. Tuberc.* 74, 249-257. [French and Spanish summaries. Authors' summary modified.] 19

Three human strains and one bovine strain of *M. tuberculosis* showed a marked increase in virulence for chick embryos after 10-15 passages through embryonated eggs. With the exception of the bovine strain, a markedly increased virulence was also noted for g. pigs. The number of viable bacilli inoculated was determined by counting the colonies on penicillin blood agar plates. Reproducible counts were consistently obtained.

UNGAR, J., FARMER, P. & MUGGLETON, P. W. (1956). Freeze-dried B.C.G. vaccine. Methods adopted in preparation of a standard product.

—*Brit. med. J.* Sept. 8th. 568-571. [Authors' summary modified.] 20

An account of a method for the production of a freeze-dried B.C.G. vaccine, using dextran with glucose as a protein-free drying medium. The B.C.G. organisms can be grown in deep culture in Sauton's medium with 0.025% triton WR 1339—a non-ionic polyoxyethylene ether—without affecting their biological properties. The bacteria, uniformly dispersed, can be easily harvested in the centrifuge and the deposit resuspended in dextran-glucose solution. A method is described for counting the viable organisms with consistent results; viability can be accurately standardized. The dried vaccine is viable for at least 12 months when stored below 20°C. The relationship between the number of viable organisms in various batches and the tuberculin "conversion" of g. pigs is shown. There is also a direct correlation between the viable-cell count and the size of local lesions in g. pigs after i/d injection.

RHEINS, M., BURRELL, R. G. & BIRKELAND, J. M. (1956). Tuberculous antibodies demonstrated by agar diffusion. I. Specificity and incidence of agar-diffusion antibodies in rabbit sera.—*Amer. Rev. Tuberc.* 74, 229-238. [French and Spanish summaries.] 21

BURRELL, R. G., RHEINS, M. & BIRKELAND, J. M. (1956). Tuberculous antibodies demonstrated by agar diffusion. II. Further characterization of these antibodies and their distribution in human tuberculous sera.—*Ibid.* 239-244. [French and Spanish summaries. Authors' summaries modified.] 22

I. Agar diffusion antibodies possessing protein specificities were found in some sera of rabbits injected with mycobacteria. These substances are often present in low concentrations and may require concentration of the test serum for their demonstration. Some of these antibodies may have specificities for proteins different from those observed with the sensitized-erythrocyte techniques employed. Presumably these antibodies are not associated with tuberculin activity.

II. Five of 40 tuberculous human sera contained agar-diffusing antibodies specific for antigens in Old Tuberculin. An equal number of sera from non-tuberculous children failed to react. The anti-polysaccharides, agar-diffusing antibodies, and the anti-proteins demonstrated with protein-sensitized erythrocytes were found to be associated with the gamma globulin-bearing fractions in both the human sera and the sera from rabbits injected with B.C.G.



ROTOV, V. I. & KROSHEV, A. N. (1956). [Diagnosis of paratuberculosis in cattle.] — *Veterinariya, Moscow*. 33, No. 7. pp. 64-65. [In Russian.] 23

A report on the double i/d tuberculin test, using avian P.P.D. tuberculin, for the diagnosis of Johne's disease in a herd of 81 cows. Intestinal lesions were found in all of 18 positive reactors.—R.M.

— (1956). *Control of Johne's disease in cattle, sheep and goats.* — pp. 202. Paris: The Organisation for European Economic Co-operation. (Project No. 207.) 12s. 24

This is the report of a meeting, organized by the European Productivity Agency of the Organisation for European Economic Co-operation, held at Weybridge in February-March 1955. It was attended by 35 veterinarians, from 10 European countries. Among the meeting's recommendations were the following:—no country should assume that it is free from the disease unless extensive investigations prove negative; where the disease exists on a small scale, the slaughter of all affected animals is the best control measure; vaccination is suitable for sheep, but not for cattle which are being tuberculin tested, because vaccination gives false positive results to the tuberculin test; precautions must be taken to prevent cross-infection between cattle and sheep; international co-operation is required to evaluate the complement-fixation test for Johne's disease under conditions prevailing in different countries.

The report continues with a survey of the literature on the disease, and then with the texts of 18 papers read at the meeting, some of which are abstracted below. There is a list of recommendations (p. 166) for the control of the disease in cattle. The report is well compiled, but the reader should beware of frequent typographical errors.—R.M.

I. V.D. SCHAAP, A. (1956). *Johne's disease in bovines. The disease in practice and its control.*—In "Control of Johne's disease in cattle, sheep and goats". Organisation for European Economic Co-operation. (Project No. 207.) pp. 143-158. 25

II. GORET, P. (1956). *Premunition against Johne's disease. Present situation in France.* —*Ibid.* pp. 159-160. 26

III. GISLASON, G. (1956). *Paratuberculosis in cattle in Iceland.*—*Ibid.* pp. 121-133. 27

IV. SIGURDSSON, B. (1956). *Johne's disease in sheep. Paratuberculosis of sheep and methods for controlling it.*—*Ibid.* pp. 169-188. 28

V. STAMP, J. (1956). *Johne's disease of sheep as seen in Scotland.*—*Ibid.* pp. 189-191. 29

I. S. discussed the geographical, seasonal and age incidence of Johne's disease in the province of Friesland. No figures were available for the incidence in other provinces of the Netherlands. There is also a comparison of the results of faeces examination with the johnin and c.f. tests.

II. Two vaccines are at present used in France: the "classical" live vaccine described by Vallée & Rinjard (1926) and a lyophilized live vaccine. The latter consists of *M. johnei* grown in liquid medium without extract of *M. phlei*; at the time of administration it is suspended in a base containing saponin and bentonite. There is no evaluation of the relative merits of these preparations.

III. An account of the spread of Johne's disease in sheep and cattle in Iceland, since its introduction in 1933, with results of diagnostic tests, including the c.f. test.

IV. The dead vaccine developed by the author was considered to be safe and efficient for controlling Johne's disease in Iceland. [See also *V.B.* 22, 3613 & 25, 1572.]

V. In Scotland the disease was a common cause of emaciation in sheep, affecting 5-15% of adult animals. Four different pathological forms were described; 3 of them did not have the typical thickening of the bowel and diagnosis was often difficult. S. stated that the c.f. test and allergic tests were of little value in sheep.

—R.M.

DANNENBERG, A. M., JR. & SCOTT, E. M. (1956). *Determination of respiratory LD<sub>50</sub> from number of primary lesions as illustrated by melioidosis.*—*Proc. Soc. exp. Biol., N.Y.* 92, 571-575. [Authors' summary modified.] 30

A method is described whereby the respiratory LD<sub>50</sub> can be obtained from the dose of organisms inhaled and from counts of primary pulmonary lesions, provided a single pulmonary lesion is fatal and progressing primary lesions do not occur elsewhere. The method was tested and confirmed in experimental melioidosis in mice and hamsters, and its advantages over the usual titration method were discussed. The number of *Pfeifferella whitmori* necessary to generate a single lesion, called the "ratio", is obtained by dividing the inhaled dose by the total number of primary pulmonary foci. This "ratio" multiplied by 0.7 equals the respiratory LD<sub>50</sub>. Data and graphs are presented to estimate the total number of primary pulmonary lesions when they are so numerous that only

those on the surface can be counted. Estimates of the 95% confidence interval of the respiratory LD<sub>50</sub> obtained by this method overlapped those obtained by the titration method.

GOYON, M. (1956). A propos de quelques cas de pseudo-tuberculose du Lièvre dans la Sarthe: Étude bactériologique et sérologique de 10 souches de *Cillopasteurella pseudotuberculose*. [*Pasteurella pseudotuberculosis* infection in hares in the department of Sarthe, France. Bacteriological and serological study of 10 strains.]—*Rec. Méd. vét.* **132**, 539-548. **31**

Strains of *Past. pseudotuberculosis* were isolated from the carcasses of hares in an epizootic. Lesions of the myocardium were observed in one case. A serological study showed that the 10 strains isolated included 4 of the 5 strains isolated previously (I, II, III and V). Strain V was isolated for the second time in France and for the first time from the hare. There were no marked biochemical differences in the strains under study.—T.E.G.R.

STEFANSKI, W. (1956). Rôle des parasites dans la transmission des maladies infectieuses du porc. [Role of parasites in the transmission of infectious diseases of pigs.]—*Rec. Méd. vét.* **132**, 585-593. **32**

The part played by helminths in the transmission of swine erysipelas is discussed. The conclusion arrived at is that *E. rhusiopathiae* does not invade the host through the lesions set up in the intestinal mucosa by strongyle parasites which possibly secrete a bactericidal or bacteriostatic substance. The organism may, however, gain entrance through skin lesions caused by the larvae.—T.E.G.R.

GRAY, M. L., SINGH, C. & THORP, F., JR. (1956). Abortion and pre- or postnatal death of young due to *Listeria monocytogenes*. III. Studies in ruminants.—*Amer. J. vet. Res.* **17**, 510-516. [Authors' summary modified. For Parts I & II, see *V.B.* **25**, 3522.] **33**

Abortion or early death of the new-born followed oral administration of *Erysipelothrix (Listeria) monocytogenes* to pregnant ewes and goats, of which 2 died from septicaemia and the rest showed no clinical manifestations. Lesions in aborted fetuses and in the new-born were similar to those seen in natural infection and the organism was isolated from most of the fetuses and membranes. The organism was also isolated from the kidney and the brain of a stillborn kid whose dam had been kept in a contaminated pen during the last 3 weeks of pregnancy. A suspension of *E. monocytogenes*

administered orally to a cow in the 7th month of pregnancy produced no ill effects. A suspension of the organism was instilled into the conjunctiva of a goat in advanced pregnancy. The animal gave birth to apparently healthy triplets but died from *E. monocytogenes* encephalitis 56 hours later.

CHARTER, R. E. (1956). *Escherichia coli* type O.114 isolated from infantile diarrhoea and calf scours.—*J. Path. Bact.* **72**, 33-38. [Author's summary modified.] **34**

Eleven strains of *E. coli* O.114 were examined: 2 were isolated from calf scours, 5 from an outbreak of infantile diarrhoea, and 4 from sporadic cases of gastro-enteritis. On "H" agglutination, 4 varieties of *E. coli* O.114 were identified from human sources (H.2, H.32, H.10 and H unknown), and H.32 only from calf scours. There was no obvious relationship between the type of "H" antigen and the biochemical reactions.

TOYOKAWA, K. & HOLLANDER, D. H. (1956). Variation in sensitivity of *Escherichia coli* to freezing damage during the growth cycle.—*Proc. Soc. exp. Biol., N.Y.* **92**, 499-500. [Authors' summary modified.] **35**

The sensitivity of *Bact. coli* to freezing varied during the growth cycle, being maximal during the log. phase.

KAUFFMANN, F. & PETERSEN, A. (1956). The biochemical group and type differentiation of Enterobacteriaceae by organic acids.—*Acta path. microbiol. scand.* **38**, 481-491. [In English.] **36**

The use of optically active and inactive tartaric acid, mucic acid and citric acid in the differentiation of members of the family Enterobacteriaceae is described. These acids are also useful in the type determination of *Salmonella* and *Klebsiella*.—JOHN SEAMER.

CLARENBURG, A., KAMPPELMACHER, E. H. & LOK, B. (1956). Infection in pigs with a rare strain of *S. cholerae suis*.—*Leeuwenhoek ned. Tijdschr.* **22**, 261-264. [In English.] **37**

*Salmonella cholerae-suis* was isolated from 5 pigs of a herd slaughtered because of swine fever. The strain isolated was unusual in that it formed H<sub>2</sub>S in sulphite agar.—R.M.

WILSON, J. E. (1956). Fowl typhoid—The effect of vaccination on the natural and experimental disease.—*Vet. Rec.* **68**, 664-668. [Author's summary modified.] **38**

Killed vaccines, details of which were given, provided no protection against experi-



mentally induced fowl typhoid, and a large-scale field trial with one of the vaccines showed it to be ineffective in preventing the natural disease. After inoculation with a partly attenuated culture about one-third of the birds died; the remainder developed a solid immunity. When the latter were challenged, no clinical signs developed, but there was a temporary cessation of egg production. In several birds there was transient excretion of *S. gallinarum* in the faeces and two birds laid a proportion of infected eggs throughout the period of observation.

WILSON, J. E. (1956). The treatment of carriers of *Salmonella pullorum* and *Salmonella gallinarum* with furazolidone.—*Vet. Rec.* **68**, 748-751. [Author's conclusions copied verbatim.] 39

The feeding of furazolidone 0.04% in the mash continuously for 12 days to birds which gave positive results to agglutination tests for *S. pullorum* by both tube and rapid methods, failed in most cases to cause a significant or permanent lowering of the agglutination titre. None of the birds ceased to react as a result of treatment. In 20 of 26 treated carriers, salmonella persisted after treatment. Distorted oviducts were the commonest site of remaining infection. Treatment had a marked preventive effect on the laying of infected eggs; only two of 466 eggs laid after treatment contained salmonella. On this account it is suggested that the drug may be particularly useful in the prevention of salmonellosis in turkeys and ducks.

PROKOF'EVA, M. T. (1955). [Review of large-scale field trials of the use of serum and vaccine against paratyphoid of ducks and geese.] — *Nauch. Trud. ukrain. Inst. exp. Vet.* **22**, 159-170. [In Russian.] 40

On ten farms 7,000 geese and 3,000 ducks were inoculated simultaneously with immune serum and killed vaccine against *S. typhimurium* infection. 1½-2% of inoculated birds died from paratyphoid, compared with 22-26% of uninoculated birds on the same farms. Immune serum was also used alone for prophylactic and therapeutic purposes. During 8 months some 1,300 litres of the serum and 350 litres of the vaccine were produced by the Ukrainian Veterinary Institute.—R.M.

COOPER, G. N. (1956). A rapid method for the identification of *Salmonella* species.—*J. Path. Bact.* **72**, 39-45. [Author's summary modified.] 41

The technique described for the identifica-

tion of the flagellar antigens of salmonella cultures depends on the ability of homologous diphasic "H" antisera to inhibit the swarming growth through a semi-solid agar. A clear plaque-like zone of inhibition is observed at the site on which the reacting antiserum is placed. *Salmonella* species were identified within 3 days of their isolation, thus reducing the delay associated with the usual serological methods. The method is considered useful for rapid diagnosis, which should, however, be confirmed by the usual serological methods.

MURÁNYI, F. & PROHÁSZKA, L. (1956). Behaviour of salmonella strains in synthetic media.—*Acta microbiol. hung.* **3**, 247-252. [In English. Russian summary. English summary modified.] 42

Of the amino-acids tested only 4 (glutamic acid, serine, histidine and asparagine) supplied sufficient nitrogen and carbon for the growth of *Salmonella*. The utilization of these acids varied with the individual organisms. *S. cholerae-suis* var. *kunzendorf* grew abundantly in media containing one of these acids while *S. typhi-suis* var. *voldagsen* and *S. gallinarum* failed to grow.—T.E.G.R.

MANTEU, A. & DE NOOY, J. A. (1956). The activity of some antibiotic combinations on *Salmonella*. — *Leeuwenhoek ned. Tijdschr.* **22**, 231-236. [In English.] 43

In combination, chloramphenicol and polymyxin B, and to a lesser extent neomycin and polymyxin B, were synergic in their action *in vitro* against most of 72 strains of salmonella.

—R.M.

SUURBALLE, A. & NIELSEN, F. W. (1956). La lutte contre les brucelloses animales. [Control of brucellosis in livestock in Denmark.] — *Bull. Off. int. Epiz.* **46**, May. pp. 354-365. [English summary.] 44

Control of brucellosis of cattle in Denmark is based on the registration of free herds after repeated negative ring and agglutination tests. Vaccination is not allowed at any time during the test period. After registration the milk is tested regularly and, when necessary, agglutination tests are carried out. Only registered animals are allowed in stock markets or on communal pastures. Health certificates for trade stock are issued only for registered cattle. For control of the disease in pigs testing of the blood of slaughter animals is recommended.—T.E.G.R.

DE VRIES, J. (1956). Individueel melkonderzoek op abortus Bang. [Examination of

individual milk samples for *Br. abortus*.]—*Tijdschr. Diergeneesk.* **81**, 569-575. [In Dutch. English, French and German summaries.] **45**

False positive results from the milk ring test were detected by repeating positive tests with the milk diluted 1:4 and 1:8 with normal (negative) milk. The results were compared with those of the whey agglutination test. This procedure was useful when the result of the blood agglutination test was doubtful.—R.M.

BORZENKOV, D. S. (1956). [Study of vaccinal immunity to brucellosis in farm animals by a cytological method.]—*Veterinariya, Moscow.* **33**, No. 7. pp. 61-63. [In Russian.] **46**

The extent of inflammation which formed at the site of injection of a weakly virulent strain of brucella (*Br. suis* Strain 61), and the number of macrophages in the inflammatory exudate, were directly proportional to the dose of vaccine. The establishment of immunity in the animal was accompanied by active division of cell nuclei in the exudate. Thus by studying the macrophage reaction in stained smears of inflammatory exudate, it was possible to estimate the immunogenic properties and optimum dose of the inoculum.—R.M.

PHILLIPS, C. B., BROADWATER, G. C., REITMAN, M. & ALG, R. L. (1956). Cross infections among brucella infected guinea pigs.—*J. infect. Dis.* **99**, 56-59. [Authors' summary modified.] **47**

Significant cross infection occurred when healthy g. pigs were placed as controls in ventilated cages with g. pigs exposed bodily to aerosol of *Br. suis*. Cross infection was demonstrated when the controls were housed with aerosol-exposed animals (1) continuously for 28 days, (2) for the first day after exposure only, and (3) for the 7th day only. When g. pigs were exposed to large numbers of *Bacillus subtilis* in aerosols and kept in ventilated cages, spores were detected in the air of the cages for up to 18 days.

I. ANON. (1956). [Meeting on questions concerning the control of ovine brucellosis.]—*Veterinariya, Moscow.* **33**, No. 10. pp. 90-91. [In Russian.] **48**

II. POPOV, B. V. & ABAKIN, S. V. (1956). [Large-scale trial of vaccination of sheep with dried Strain 19 brucella vaccine.]—*Ibid.* pp. 33-39. [In Russian.] **49**

III. SOFIEV, B. I., SARSENOV, U. S., KOLAMAKIN, G. A., STUDENTSOV, K. P. & VASKOVSKAYA, L. M. (1956). [The use of dried

Strain 19 brucella vaccine.]—*Ibid.* pp. 40-44. [In Russian.] **50**

IV. SAVICH, B. M. & MOROZOV, A. G. (1956). [Field trials of vaccination of sheep with dried Strain 19 brucella vaccine.]—*Ibid.* pp. 44-48. [In Russian.] **51**

I. A meeting attended by 108 veterinary workers was held at the Ministry of Agriculture of the U.S.S.R. to discuss the use in sheep of dried Strain 19 brucella vaccine, as part of a scheme to control *Br. melitensis* infection, which is particularly a problem in Kazakhstan and the Stavropol region. Four papers dealing with vaccination trials were read [3 of them are abstracted below]. It was decided to vaccinate ewe lambs born in infected flocks, 2-3 months after weaning and again 1-2 months before service, for 2 consecutive years. Vaccinated youngstock were to be segregated into separate flocks, kept apart from infected flocks. Ewes were vaccinated 1-2 months before service for 2 consecutive years, provided they had not aborted and did not react to diagnostic tests for brucellosis. All animals were tested before vaccination by the complement fixation test and the brucella lysate allergic test, or by the latter test alone. Ewes which reacted to these tests, or which had aborted as a result of brucellosis, were isolated from the rest of the flock and were not vaccinated. Vaccinated sheep were identified by a circular hole punched in the left ear. Vaccination was always to be accompanied by general sanitary and epidemiological precautions against brucellosis. A flock was declared to be free from brucellosis if, at the end of 2 years, 9-11 months after the 2nd annual inoculation, there had been no brucella abortions and if there were no reactors to diagnostic tests.

The dosage of vaccine for sheep was defined as one-half of the standard dose for cattle for s/c administration, or one-third of the standard cattle dose for i/d administration. The standard dose consisted of 25,000 million organisms.

Attention was drawn to the fact that brucellosis amongst shepherds attending vaccinated flocks was absent or extremely rare.

II. Vaccination trials involving 344 flocks (263,085 sheep) were carried out in the Stavropol region from autumn 1954 to spring 1956. Strain 19 vaccine was administered i/d in doses of 8,000 million organisms, 15-30 days after the beginning of the breeding season. Abortions amongst vaccinated ewes in infected flocks amounted to 1.4% of all pregnancies during the first year of vaccination, compared with 7.1% in infected unvaccinated flocks. 8 months after vaccination, 6.5% of healthy adult ewes reacted



to the agglutination test, 0.6% reacted to the c.f. test, and 14.2% reacted to the brucella lysate allergic test.

III. On 10 collective farms in the Taldui-Kurgan region of Kazakhstan 62,000 sheep were vaccinated. The dosage used was 7,000 million organisms for each animal, split into 4 parts given s/c at intervals of 6 months. As before, the success of vaccination was judged by the reduction in the number of abortions. Vaccinated yearlings were in constant contact, during their first pregnancy, with infected sheep.

IV. On 3 state farms in the Northern Caucasus 37,000 sheep were vaccinated. The percentage of reactors to preliminary c.f. and allergic tests varied from flock to flock, from 0.5-45%. The optimum dosage of Strain 19 vaccine was assessed at 25,000 million organisms given s/c or 5,000 million given i/d. Inoculation with either dose was repeated after 30 days. There were 4-4½ times fewer cases of brucellosis in lambs born to ewes in infected flocks, inoculated s/c, than in lambs from unvaccinated ewes, but there was little difference between the proportion of infected lambs from ewes inoculated i/d and the proportion from unvaccinated ewes: an i/d dosage of 5,000 million organisms apparently was insufficient. —R.M.

SELIVANOV, A. V. (1956). [Immunization of g. pigs by instillation into the conjunctival sac of N.I.I.E.G. live brucella vaccine.]—*J. Microbiol., Moscow*. 27, pp. 86-91. [In Russian.] 52

Immunity of g. pigs to infection with *Br. melitensis* was stronger after instillation of live vaccine into the conjunctival sac, than after s/c inoculation.—R.M.

BUDDLE, M. B. (1956). *Ovine brucellosis in New Zealand*.—*Proc. IIIrd Int. Congr. Anim. Reprod.* Cambridge, 1956. Sect. II. pp. 37-38. [French summary. Author's summary modified.] 53

*Brucella ovis* infection is widespread in New Zealand, causing impaired fertility in rams, abortion in ewes, and mortality in new-born lambs. It is an important cause of ram wastage. The economic importance of the infection in ewes has not been clearly established. Natural transmission of infection from ram to ram occurs readily during the mating season but is also possible when rams are run together in the absence of ewes. Ewes can acquire active infection following mating with infected rams. Active infection is more persistent in rams than in ewes. Vaccination offers promise in the con-

trol of the disease; in particular, a procedure involving simultaneous inoculation of Strain 19 vaccine and an adjuvant vaccine incorporating killed *Br. ovis* organisms.

BLAWAT, F. (1955). Further observations concerning infection with *Brucella* in auxiliary veterinary personnel.—*Bull. Inst. mar. trop. Med. Gdansk*. 6, 99-109. [In Polish, Russian and English.] 54

Of 108 auxiliary veterinary personnel examined in Poland during 1952-53, twenty had symptoms of systemic brucellosis and three had skin eruptions. Following examination by agglutination, c.f. and skin tests, 31 were considered infected. Of 29 who had been employed for 12 months or less one was infected, of 17 with two years of service five, and of eight who had been working from 6-10 years seven were infected.—E.G.

RINGEN, L. M. & OKAZAKI, W. (1956). The susceptibility of several different laboratory animals to infection with *Leptospira pomona*.—*J. infect. Dis.* 99, 60-62. [Authors' summary modified.] 55

G. pigs and white mice were about equally susceptible, hamsters significantly more resistant, and 2-day-old chicks highly resistant to infection with *L. pomona*, as judged by rising titre of serum antibodies, using the agglutination-lysis test. In work with relatively large numbers of the organism, any of these animals may be suitable either for isolation of the organism or for serological diagnosis. Hamsters should be the most suitable for the purpose of isolation as the organism persisted longest in their tissues.

OXER, D. T. (1956). Enterotoxaemia in goats. —*Aust. vet. J.* 32, 62-66. 56

Periodic vaccination at about 6-month intervals is suggested as a necessary procedure to increase flock resistance to this disease. A summary of the information on enterotoxaemia in goats is also provided.—D. C. BLOOD.

I. JACOTOT, H. & VALLÉE, A. (1956). Éléments d'enquête sérologique sur l'infection du bétail français par *Vibrio fetus*. [Serological investigation of *Vibrio fetus* infection in French cattle.]—*Ann. Inst. Pasteur*. 90, 498-501. 57

II. JACOTOT, H. & VALLÉE, A. (1956). Éléments d'enquête bactériologique sur l'infection du bétail français par *Vibrio fetus*. [Investigation into *V. fetus* infection in cattle in France.]—*Ibid.* 657-658. 58

I. A serological survey of about 1,000 cattle in 16 departments of France revealed

*V. fetus* infection in 20%; a further 25% gave suspect reactions.

II. Eleven bovine strains of *V. fetus* were isolated from specimens from various parts of France. The results are in agreement with previous findings and it is considered likely that *Vibrio* infections will be demonstrated in other districts.—T.E.G.R.

VANDEPLASSCHE, M., PAREDIS, F., VAN NIEWENHUYSE, E., BRONE, E. & FLORENT, A. (1956). Beiträge zur *Vibrio*-foetus Infektion bei Rindern mit besonderer Berücksichtigung der Unfruchtbarkeit. [*Vibrio fetus* infection in cattle with special reference to infertility.] —*Zbl. VetMed.* **3**, 111-130. [English, French and Spanish summaries.] 59

The authors discuss their observations on *V. fetus* as a cause of infertility. The variable degree of infertility in bulls is ascribed to differing intensity of infection of the prepuce, variable susceptibility of the cows and variable pathogenicity of the organism. Diagnosis in bulls was by bacteriological examination of preputial material and, more accurately, by test mating. In females the vaginal mucus agglutination test was satisfactory, but the reaction could be confused by trichomoniasis. Two methods of treatment in the bull and a prophylactic attempt in 2 heifers are described.—HUGH BOYD.

KIGGINS, E. M. & PLASTRIDGE, W. N. (1956). Effect of gaseous environment on growth and catalase content of *Vibrio fetus* cultures of bovine origin. — *J. Bact.* **72**, 397-400. [Authors' summary modified.] 60

On blood agar the optimum environment was 5% oxygen and 10% carbon dioxide, either under partial vacuum, or adjusted to 96% of atmospheric pressure by adding hydrogen or nitrogen. Four of 34 strains grew only slightly better in an atmosphere containing hydrogen. For this reason and because of the danger involved, use of this gas is not recommended. Reduced oxygen increased the amount of catalase released by *V. fetus* organisms but did not cause catalase negative vibrios to become catalase positive.

ZINTZ, G. (1955). Über das Vorkommen der Vibrionen und Spirillen im Verdauungstraktus bei Tieren. [Occurrence of vibrios and spirilla in the digestive tract of animals.] — *Inaug. Diss., Munich.* pp. 68. 61

*Vibrio jejuni* was isolated from faecal samples from 11 of 200 adult cattle, from 20 of 300 samples of bovine duodenal and rectal contents and from 8 of 200 faecal samples from

calves. Clinical symptoms were foetid diarrhoea and rise of temp. *Spirillum suis* was present in 400 faecal samples from apparently healthy pigs. Z. stated that whereas *V. fetus* did not survive outside the animal body, *V. jejuni* remained alive up to 3 days in a sufficiently wet environment. *Spirillum suis* survived up to 4 days in liquid manure from pigs but not in liquid manure from cattle. Both *V. jejuni* and *Spirillum suis* survived for 2 days in stream water. An organism resembling *Spirillum* was isolated from the oral cavity of rats. *V. jejuni* was never found in cattle together with *Bact. coli*.—E.G.

BISSET, K. A. & THOMPSON, R. E. M. (1956). A further short note on the morphology of an organism isolated from strawberry foot-rot. — *J. Path. Bact.* **72**, 322. [Authors' note slightly modified.] 62

The organism isolated from strawberry foot-rot in sheep and tentatively classified as a species of *Rhizobium* (Thompson, 1954), has been further examined by the method of Hale (1953) for cell walls, and proves to have a remarkable, indeed unique, structure in this respect. The spherical units are septate in a manner strongly resembling staphylococci (Bisset & Hale, 1953), although they may bear from one to three or more flagella. The filaments are markedly septate, and these septa are disposed, not only at right-angles to the main axis, but also parallel to it. The latter feature has never previously been described in filamentous bacteria, and permits of the lateral budding-off of cells, thus giving a superficial resemblance to the formation of swimmers in *Rhizobium*, as previously described.

The systematic position of this organism is obscure, but its type of septation and the form of its coccal units are suggestive of a relationship with the true cocci.

OSTASHEV, S. N. (1956). [Flies as transmitters of infectious diseases of farm animals.] — *Veterinariya, Moscow.* **33**, No. 6. pp. 75-76. [In Russian.] 63

*Erysipelothrix rhusiopathiae* was isolated from the gastro-intestinal tract of one out of 57 flies (unspecified) collected from a piggery where there had been swine erysipelas. *Salmonella cholerae-suis* was isolated from 3 out of 68 flies collected from a piggery where paratyphoid had occurred.—R.M.

DUBOS, R. J. & SCHAEGLER, R. W. (1956). Reversible changes in the susceptibility of mice to bacterial infection. I. Changes brought about by injection of pertussis



vaccine or of bacterial endotoxins.—*J. exp. Med.* **104**, 53-65. 64

SCHAEGLER, R. W. & DUBOS, R. J. (1956). Reversible changes in the susceptibility of mice to bacterial infection. II. Changes brought about by nutritional disturbances.—*Ibid.* 67-84. 65

I. The effect of endotoxin on the resistance of mice to bacterial infection was studied. The animals were first given an i/p inj. of pertussis vaccine, heat killed cells of *Klebsiella pneumoniae* or a lipopolysaccharide of *Salmonella typhi*; they were then given an i/v inj. of virulent cultures of coagulase-positive staphylococci, *Mycobact. tuberculosis*, or *Klebsiella pneumoniae*. It was observed that resistance was lower than in controls shortly after treatment with endotoxin and higher after a longer interval.

II. Nutritional disturbances lowered the resistance of mice to experimental infection with *K. pneumoniae*, *Staph. aureus*, or *M. tuberculosis*. This occurred within a few hours to a few days according to the nature and degree of nutritional disturbance, bacterial multiplication taking place on a large scale in the early stages. Resistance soon returned to normal.—T.E.G.R.

UNVERRICHT, W., KOEHN, A., OESER, H., SCHATTMANN, K. & MEHL, H. G. (1956). Die Bindung von radioaktivem Penicillin in gesunden und kranken Tierorganen sowie Aufschwemmung und Kulturen von empfindlichen und resistenten Bakterien. [Attachment of radioactive penicillin to healthy and diseased organs, and to suspensions and cultures of susceptible and resistant bacteria.]—*Zbl. Bakt. I. (Orig.)* **166**, 153-172. [English, French and Russian summaries.] 66

In mice injected i/m with S<sup>35</sup>-labelled ethyl-piperidine-penicillin the liver, kidneys and bones accumulated penicillin in varying degrees. Organs infected with penicillin-resistant *Klebsiella* and *Salmonella* appeared to have an increased tendency to accumulate the antibiotic. In bacterial suspensions (studied by elution tests) various species bound penicillin in different degrees, but the amount bound was independent of whether they were sensitive or resistant to the antibiotic. This bond appeared to be weakened by the metabolic processes in living bacteria. By a specially developed method of diffusion culture, using 8 species of resistant and sensitive bacteria, it was shown that resistant bacteria continuing to grow in the presence of penicillin may take up so much of

the available antibiotic as to obstruct its action on co-existing sensitive pathogens.

—G. P. MARSHALL.

HILL, D. W. & GEBHARDT, L. P. (1956). Morphological transformation of *Candida albicans* in tissues of mice.—*Proc. Soc. exp. Biol., N.Y.* **92**, 640-644. [Authors' summary modified.] 67

Yeast-like cells of *C. albicans* and *C. stellatoidea*, but not of other species of *Candida*, formed elongated pseudomycelia within an hour after injection into the subcutaneous tissues of mice. Later considerable growth of these filaments with the appearance of septa was observed. The authors suggested that filamentation of *C. albicans* *in vitro* hinders ingestion of the organism by mouse phagocytes, and that the changes in morphology play a role in the pathogenesis of the infection.

SELLERS, K. C., SINCLAIR, W. B. V. & LA TOUCHE, C. J. (1956). Preliminary observations on natural and experimental ringworm in cattle.—*Vet. Rec.* **68**, 729-732. [Authors' summary modified.] 68

Ringworm due to *T. verrucosum* var. *discoidea* was reproduced in calves by inoculating material from lesions or culture suspensions on to prepared sites on the skin. Provided the site could not be disturbed by the animal, experimental lesions closely resembled the natural disease. Healing was spontaneous over a period of 4 months. Biopsy indicated that infection was a gradual process of invasion of the keratinized layers of skin and hair follicles. The findings are discussed in relation to field observations.

MCPHERSON, E. A. (1956). *Trichophyton mentagrophytes*: natural infection in pigs.—*Vet. Rec.* **68**, 710-711. [Author's summary modified.] 69

The occurrence of *Trichophyton mentagrophytes* infection in pigs in Britain is recorded. The disease was self-limiting, healing in less than 10 weeks from the time when the lesions developed. The disease may be more prevalent than would be supposed from the absence of published data.

YOUNG, A. M. (1956). Chronic diffuse ringworm due to *Microsporum canis* in a dog, involving two claws.—*Vet. Rec.* **68**, 606-607. 70

Following the development of ringworm in human contacts, *M. canis* was isolated from lesions on the claws of a 2-year-old Irish Terrier which had been treated for demodectic

mange 6 months earlier. Thick, flat crust-like lesions extended from the back of the neck to the root of the tail.—E. G. WHITE.

GIERLØFF, B. C. H. (1956). Om microspori, specielt hos hund og kat. [**Microsporum infection, particularly in dogs and cats.**]—*Nord. VetMed.* **8**, 609-631. [In Danish. English and German summaries.] **71**

Of 11 dogs and 2 cats suspected to have transmitted ringworm (*Microsporum canis* infection) to their owners and others, *M. canis* was isolated in pure culture from 4 of the dogs and from both cats. The cultures were considered identical with those from the infected children. A bitch inoculated, after light scarification of the inner surface of the thigh, with material from dog lesions which had shown fluorescence under Wood's light, developed after 14 days similar lesions which later spread over the body. Six puppies born to the bitch all became clinically infected at the age of 5 weeks.—F.E.W.

CHATTAWAY, F. W., THOMPSON, C. C. & BARLOW, A. J. E. (1956). **The action of inhibitors on dermatophytes.**—*Biochem. J.* **63**, 648-656. **72**

The effect of certain organic inhibitors and detergents on the endogenous respiration of dermatophytes is reported and inferences are drawn regarding fungal metabolism.

—JOHN SEAMER.

MOREIRA-JACOB, M. & VAN UDEN, N. (1956). **Mycotic abortion in cattle. A case record and a review of the relevant literature.**—*Brit. vet. J.* **112**, 453-461. **73**

*Aspergillus niger* was isolated from the abomasal content of the 4-month aborted foetus of an artificially inseminated cow from a brucella-free herd. The fungus was considered to have caused the abortion, attempts to isolate other organisms having yielded negative results. The cow had also aborted in the 5th month of the previous pregnancy. The authors reviewed the literature, discussing the incidence, aetiology and mode of infection. They listed 40 references.—F.E.W.

NOBEL, T. A. & SHAMIR, A. (1956). [**Congenital mycosis in a lamb.**]—*Refuah vet.* **13**, No. 1. In Hebrew pp. 23-24. English summary p. 37. **74**

Granulomatous lesions containing fungal mycelium and spores were found in the lungs of a day-old lamb. Microscopic and cultural examination suggested that the fungus was *Aspergillus fumigatus*.—E. G. WHITE.

TAUBITZ, K. (1956). Zur Pneumomykose der Hühnerküken. [**Pneumomycosis (infection with *Aspergillus*, *Mucor* and other moulds) in young chicks.**]—*Berl. Münch. tierärztl. Wschr.* **69**, 328-330. [English summary.] **75**

Fungi were isolated in culture from 97 of 166 chicks submitted for diagnosis in 1955. In 56 of them *S. pullorum* was also present. The lung lesions resembled those of pullorum disease. The incidence of fungal infection was much lower in 1956. The high incidence in 1955 is attributed to mouldy straw used as litter as a result of the wet harvest of the preceding year.

—E. G. WHITE.

POTENZA, L. & FEO, M. (1956). **Use of polarized light in diagnosis of mycotic infections.**—*Amer. J. clin. Path.* **26**, 543-551. [Interlingua summary. Authors' summary slightly modified.] **76**

Materials from human mycoses and experimental mycotic lesions in animals were examined under polarized light. In all instances the cells of the fungi were optically active, some showing typical polarization crosses. This method distinguishes fungi from morphologically similar parasites, such as leishmanial forms. When used in combination with established stains and cultures, it may prove of value in the study of mycotic infections.

SULLIVAN, J. F., GILL, E., SOMER, A. & HEDDLESTON, K. (1956). **Laboratory analysis of several field outbreaks of CRD.**—*Proc. 28th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.* Newark, Delaware. June 19 & 20, 1956. 7 pp. [Mimeographed.] [Authors' summary modified.] **77**

Affected birds from 6 farms all had evidence of multiple infective agents. These included both bacterial and viral organisms that have previously been reported as influencing the course of chronic respiratory disease. Limited experiments with a commercial antigen prepared from the pleuropneumonia-like organism are described.

TAYLOR, J. R. E., FABRICANT, J. & LEVINE, P. P. (1956). **A comparison of four *in vitro* methods for the isolation of the P.P.L.O. of C.R.D. from tracheal exudate.**—*Proc. 28th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.* Newark, Delaware. June 19 & 20, 1956. 2 pp. [Mimeographed.] [Authors' conclusion modified.] **78**

It is concluded that the primary isolation is most successfully accomplished by cultivation



on a modified Grumble's medium. It is a simple method even for workers not familiar with cultivation of pleuropneumonia-like organisms.

GRYAZIN, V. I. & SHCHERBAKOV, I. V. (1954).

[Experiments with formolized tissue vaccine against pleuro-pneumonia.] — *Trud. Inst. Vet., Alma-Ata*. **6**, 171-176. [In Russian.] **79**

Four formolized vaccines against bovine contagious pleuro-pneumonia were prepared from the following:— tissue extract and lymph from infected cattle; tissue extract and cultures of the organism in Martin's broth; infected lung tissue and lymph; infected lung tissue and broth cultures. Each vaccine was inoculated into 10 cattle; the first dose was 15 ml., and the second dose, given 5 days later, was 30 ml. Immunity was assessed by the presence of complement-fixing antibodies in the blood 5, 10, 20, 30 and 40 days after the second inoculation. It was concluded that vaccines prepared from cultures were more effective than those prepared from infective lymph. There was no advantage to be gained from adding lung tissue to the vaccine.

—R.M.

HEIKKILA, I. (1956). Pleuropneumonie infectieuse des moutons. [An infectious pleuropneumonia of sheep in Angola.]—*Bull. Off. int. Epiz.* **46**, May. pp. 585-590. **80**

The condition was encountered in sheep with *Oestrus ovis* infestation and it is considered that infection took place by extension from the upper respiratory tract. An organism was isolated from the lesions; it resembled the causal organisms of bovine and caprine contagious pleuropneumonia and of agalactia of goats morphologically and culturally; it differed

from them in its biological and serological characteristics.—T.E.G.R.

RILEY, C. T., CABELLI, V. J. & KELLER, R. (1956). Effects of orally inoculated bacteria on gastro-intestinal flora of newborn mice.—*Proc. Soc. exp. Biol., N.Y.* **92**, 474-477. [Authors' summary modified.] **81**

The emergence and persistence of Gram-positive cocci, lactobacilli and coliform organisms in the gastro-intestinal tract of Swiss mice from birth to weaning were studied. Changes in the ecology of the normal intestinal flora resulting from oral administration of *Proteus vulgaris* and *Pseudomonas pyocyanea*, and of organisms normally present in adult mice were described. *P. vulgaris*, and to a lesser extent *Ps. pyocyanea*, delayed the emergence and decreased the quantity of both lactobacilli and *Bact. coli*. These mice had moderate increases in growth rates over those of the control groups. Recently isolated *Shigella* species when fed to new-born mice survived passage through the stomach, but did not persist in the gastro-intestinal tract nor cause lesions.

JENNINGS, A. R. & SEAMER, J. (1956). A new blood parasite in British pigs. — *Nature, Lond.* **178**, 153-154. **82**

Pleomorphic bodies, mostly ovoid rings and cocci, were found in the blood of young splenectomized pigs, both extracellular and in close association with the r.b.c. In one case there was fever and a mild anaemia. Pig to pig transmission was effected. Culture, *in vitro* or in chick embryos, was unsuccessful. The organism is considered to be *Eperythrozoon parvum*.—S. BRIAN KENDALL.

See also absts. 332, (report, Lister Institute); 325 (report, Canada); 326 (report, Basutoland); 327 (report, Zanzibar).

## DISEASES CAUSED BY PROTOZOAN PARASITES

I. WOOLFE, G. (1956). Trypanocidal action of phenanthridine compounds: effect of changing the quaternary groups of known trypanocides.—*Brit. J. Pharmacol.* **11**, 330-333. [Author's summary modified.] **83**

II. WOOLFE, G. (1956). Trypanocidal action of phenanthridine compounds: further 2:7-diamino phenanthridinium compounds. — *Ibid.* 334-338. [Author's summary modified.] **84**

I. The methyl quaternating group of phenanthridinium compounds known to possess trypanocidal activity was changed to ethyl, propyl, or allyl. Trypanocidal activity was enhanced, especially in the compounds originally of high activity.

II. Results of tests for trypanocidal activity on a number of phenanthridinium compounds are reported.

The effect of chemical structure upon trypanocidal activity is discussed. One compound, 2:7-diamino-9-phenyl-10-ethoxypropylphenanthridinium methane sulphate, had low acute toxicity for mice and high activity in trypanosome infections in mice.

HESS, E. (1956). Die Diagnostik der Trichomonadenseuche beim Zuchtstier. [Diagnosis of trichomoniasis in bulls.]—*Zbl. VetMed.* **3**, 454-459. [English, French and Spanish summaries. English summary modified.] **85**

After examining 1,847 bulls, 24.2% of

which were infected, H. discussed the technique of preputial lavage and microscopic and cultural diagnosis. For the cultural demonstration of trichomonads, he recommended the simultaneous use of 3 different media. He described a method for comparing objectively the value of different culture media.

TASSINARI, R. (1956). Piometra e fecondazione artificiale. [**Pyometra and artificial insemination.**]—*Veterinaria, Milano*. **5**, 144-152. [English, French and German summaries.] **86**

Experimental, practical and statistical observations on trichomonad pyometra in cows are recorded. Treatment consists of draining of the uterus by one or all of the following methods: siphoning, enucleation of the corpus luteum, and the use of oestrogens. The introduction into the uterus of blood from recovered subjects and the use of antibiotics are additional lines of treatment. Conception is taken as an indication of a complete cure and recovered cows are immune against re-infection. Persistent cervicitis after a cure is attributed to organisms other than *Trichomonas*. The advantages of artificial insemination in control of trichomoniasis are discussed.—T.E.G.R.

REUSSE, U. (1955). Zur Frage der Zystenbildung und des Lebenszyklus bei Trichomonaden unter besonderer Berücksichtigung von *Trichomonas foetus* und *Trichomonas muris*. [**Formation of cysts during the life cycle of *Trichomonas foetus* and *Tr. muris*.**]—*Z. Tropenmed. u. Parasit.* **6**, 348-361. [English summary.] **87**

R. stated that *Tr. foetus* and *Tr. muris* do not form true cysts, but may lose their flagella and membranes under certain adverse circumstances. They then assume a rounded form, become motionless, yet are capable of resuming activity when conditions improve. After revitalization movement is by means of pseudopodia. —E.G.

DE CARNERI, I. (1956). Conservation of *Trichomonas* in monobacterial cultures.—*Amer. J. trop. Med. Hyg.* **5**, 677-680. [Author's summary modified.] **88**

*Trichomonas foetus*, *Tr. hominis* and *Tr. vaginalis* lived much longer in media permitting their growth in the presence of bacteria, than in pure cultures in CPLM medium (cystine, peptone, liver infusion and maltose). In a medium of horse serum and rice starch, *Tr. foetus* and *Tr. vaginalis* lived for more than a month when incubated with *Bact. coli* at 37°C.

CUCKLER, A. C. & MALANGA, C. M. (1956). **Nithiazide. II. Effect on enterohepatitis in turkeys.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 485-488. [Authors' summary modified.] **89**

"Nithiazide" [1-ethyl-3-(5-nitro-2-thiazolyl) urea] was more potent and less toxic than aminonitrothiazole when fed to turkeys with enterohepatitis: it was most effective when administered before infection or beginning 3 to 7 days after infection. It prevented mortality from enterohepatitis produced either by oral administration of eggs of *Heterakis gallinae* or by rectal inoculation of cultures of *Histomonas meleagridis*. The drug was equally effective whether given in the food or in the drinking water. The therapeutic feeding of rations containing 0.05% of the drug, starting 3 days after infection, prevented mortality from infectious enterohepatitis which was lethal for 73% to 83% of the untreated controls.

IKEDA, M. (1955). [**Factors necessary for *E. tenella* infection of the chicken. I. Influence of the digestive juices on infection.**]—*Jap. J. vet. Sci.* **17**, 197-200. [In Japanese. English summary.] **90**

Freshly sporulated oocysts of *E. tenella* were introduced into the crops of 3-week-old coccidia-free chicks 2-3 days after ligation of the pancreatic ducts or of the bile ducts. Infection occurred only in the chicks with ligated pancreatic ducts.—T.E.G.R.

BECKER, E. R., JESSEN, R. J., PATTILLO, W. H. & VAN DOORNINCK, W. M. (1956). A biometrical study of the oocyst of *Eimeria necatrix*, a parasite of the common fowl.—*J. Prot.* **3**, 126-131. **91**

Measurements of the length and width of a total of 6,915 unsporulated oocysts, stated to be those of *E. necatrix*, indicated a length range of 12.1-28.9  $\mu$ , a width range of 10.8-23.8  $\mu$  and a shape index (length/width) range of 1.0-1.64. The average size of oocyst was  $19.7 \pm 1.82 \mu \times 16.7 \pm 1.20 \mu$ . Differences in the average size were noted at different points in the patent period. Analysis of variance revealed much variation in oocyst size from bird to bird. All this work was based on the use of a strain of *E. necatrix* stated to have been isolated from a mixed culture (including *E. mitis* and *E. acervulina*) after feeding the intended host a ration containing 0.5% sulphaguandine.

—S. BRIAN KENDALL.

SCHMID, D. O. & WACK, P. (1955). Experimentelle Untersuchungen zur Therapie der Geflügelkokzidiose mit DIAZIL vet.-CILAG.



[Experimental research on the treatment of avian coccidiosis with sulphamethazine].—*Z. Tropenmed. u. Parasit.* 6, 437-452. [English summary.] 92

In a preliminary experiment with 2-sulphanilamido-4, 6 dimethylpyrimidin for the control of avian coccidiosis, 30 chicks and 18 pullets were infected orally with a mixture of oocysts of *Eimeria tenella*, *E. mitis*, *E. maxima* and *E. acervulina*. The drug was given daily as a 1% soln. in the drinking water. Treatment commenced either 2 days before infection or after onset of clin. symptoms. All fowls so treated for up to 16 days survived. When treatment was suspended before that period there were relapses. All controls died. It was stated that the drug should not be given as a prophylactic and that further large-scale experiments were necessary.—E.G.

FOGG, D. E. & SIEGMUND, O. H. (1956). A report of field trials with nicarbazin, a new anticoccidial agent.—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955, 240-249. 93

Field trials of "Nicarbazin" (a molecular complex of 4, 4'-dinitro-carbanilide and 2-hydroxy-4, 6- dimethylpyrimidine) are stated to have shown that the drug is an effective coccidiostat when given continuously in the food at a concentration of 0.0125%. It is claimed that "Nicarbazin" has a marked growth-promoting effect even in the absence of clinical coccidiosis. [There is no mention of the species of coccidia involved and it is not clear what criteria were adopted in classifying the causes of death. Among criteria used for assessing the efficacy of the drug was "the prices placed on pens of birds by several poultry buyers."]

—S. BRIAN KENDALL.

CLARKSON, M. J. (1956). Experimental infection of turkey poults with *Eimeria adenoeides* (Moore and Brown, 1951) isolated from a natural case in Great Britain.—*Nature, Lond.* 178, 196-197. 94

Three single oocysts from clinical cases of coccidiosis in turkey poults were sporulated in 2.5% potassium bichromate and then transferred by means of a micromanipulator to pieces of cellophane for microscopic examination. Each of the oocysts was then placed in a gelatin capsule and inserted into the crop of the 14-day-old poult (previously ascertained free from coccidiosis). This procedure was repeated with 3 single oocysts from a natural case of coccidiosis in another flock. Two of the 6 birds under experiment became infected. Oocysts from one of these birds were administered to 5

coccidia-free birds, each of which passed oocysts in the faeces 5 days later. Experiments with the sporulated oocysts derived from the original single oocysts showed that this species possessed the characteristics of *E. adenoeides*.—T.E.G.R.

MALHERBE, W. D. (1956). The manifestations and diagnosis of *Babesia* infections.—*Ann. N.Y. Acad. Sci.* 64, 128-146. 95

In spite of a considerable literature about the *Babesia* infections of animals there are comparatively few references to atypical manifestations of the disease. The typical clinical picture which follows *B. canis* infection in the dog is described and atypical cases involving respiratory, digestive, nervous and muscular aberrations which mask the usual symptoms are discussed. In cattle there is a cerebral form of the disease, attributed to infection with *B. bigemina*. *B. caballi* has been known to set up a nervous condition in foals. A number of clinical cases studied at the Onderstepoort Veterinary Institute are described. The mere finding of parasites in a sick animal does not mean that all the symptoms are caused by babesia. Atypical cases may be evaluated on their response to specific therapy.—S. BRIAN KENDALL.

KURCHATOV, V. I., NECHINENRUI, D. K., ROMANOV, V. M., KUZNETSOV, I. A. & NIKOLAEVA, E. D. (1955). [Importance of *Hyalomma scupense* in outbreaks of *Theileria annulata* infection in cattle outside the normal season for the disease.] —*Nauch. Trud. ukrain. Inst. exp. Vet.* 22, 219-231. [In Russian.] 96

*Th. annulata* infection in cattle in the Crimea during early spring was transmitted by *H. scupense*. Anti-tick measures were discussed.—R.M.

NEITZ, W. O. (1956). Classification, transmission, and biology of piroplasms of domestic animals.—*Ann. N.Y. Acad. Sci.* 64, 56-111. 97

A historical review of the classification of the piroplasms, including the classification lists compiled by earlier workers, is given and reasons are offered for a revision of the classification. Among major suggested alterations is the retention of a single genus and species, *Theileria parva*, in the Theileridae and the transference of *Th. mutans*, *Th. annulata* and *Th. lawrencei* to the genus *Gonderia* (du Toit, 1918) of the family Gonderidae (Neitz & Jansen, 1956). The known arthropod vectors of the piroplasms are detailed in a series of tables

which indicate the points in the life cycle at which transmission can be effected.

—S. BRIAN KENDALL.

EICHENWALD, H. F. (1956). **The laboratory diagnosis of toxoplasmosis.** — *Ann. N.Y. Acad. Sci.* **64**, 207-211. Discussion: pp. 212-214. **98**

Methods discussed were the dye test, the complement-fixation test, and the skin sensitivity test; also tissue culture methods for obtaining antigen.—R.M.

JACOBS, L. (1956). **Propagation, morphology, and biology of toxoplasma.** — *Ann. N.Y. Acad. Sci.* **64**, 154-179. **99**

J. discussed the propagation of *Toxoplasma* in tissue culture and in lab. animals; its morphology, with reference to electron microscopy; and its biology, including distribution in nature, the course of infection, strain variation, transmission and serology.—R.M.

SCHMIDTKE, L. (1956). **Zur Übertragung der Toxoplasmose durch Verfütterung von parasitenhaltigem Gewebe. [Transmission of toxoplasmosis by feeding infected material.]** — *Z. Tropenmed. u. Parasit.* **7**, 80-86. [English summary.] **100**

S. failed to infect mice and g. pigs by feeding brain tissue containing large numbers of *T. gondii*. The parasites did not survive *in vitro* in the presence of gastric juices. Infection by the oral route is stated to be possible only when there are epithelial lesions in the mouth or oesophagus.—E.G.

KUNERT, H. & SCHMIDTKE, L. (1956). **Zur Frage der Dauerausscheidung bei Toxoplasmose. [Excretion of toxoplasms in experimental infection.]** — *Z. Tropenmed. u. Parasit.* **7**, 87-92. [English summary.] **101**

Toxoplasms were generally not found in

nasopharyngeal and conjunctival smears of g. pigs experimentally infected by corneal scarification, except for the first few days after infection.—E.G.

EYLES, D. E. (1956). **Newer knowledge of the chemotherapy of toxoplasmosis.** — *Ann. N.Y. Acad. Sci.* **64**, 252-267. **102**

In the assessment of the efficacy of therapy rabbits are found to be satisfactory experimental animals. The efficacy of therapy may be in part related to the size of the infective inoculum. Of the sulphonamides, sulphadimidine, sulphapyrazine, sulphamerazine and sulphadiazine are all effective. Multiple sulphonamides are likely to give an additive effect with independent toxicity. Pyrimethamine exhibits marked activity against toxoplasms and has a powerful synergic action with sulphonamides. In general anti-malarial activity seems to be associated with anti-toxoplasmic activity although the reverse is not always the case. The sulphonamides seem to have the same mode of action against toxoplasms as against some other organisms in which the effect of sulphathiazole can be antagonized by *p*-amino-benzoic acid or by folic acid.—S. BRIAN KENDALL.

REUSSE, U. (1956). **Konservierung einiger tierpathogener Protozoen durch Aufbewahrung bei tiefen Temperaturen. [Preservation of some protozoa, pathogenic for animals, at low temperatures.]** — *Z. Tropenmed. u. Parasit.* **7**, 99-109. [English summary.] **103**

*Trypanosoma brucei*, *T. congolense* and *T. evansi* survived storage at  $-76^{\circ}\text{C}$ . for more than 6 months, *Babesia canis* for 5-9 weeks, *Toxoplasma gondii* for one week and *Trichomonas foetus* for up to 20 weeks. Preservation of protozoa by deep-freezing is simpler than maintenance in lab. animals.—E.G.

See also absts. **132** (influence of Eperythrozoon coccoides on pathogenicity of mouse hepatitis virus); **332** (report, Lister Institute); **326** (report, Basutoland); **327** (report, Zanzibar).

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PLATT, H. (1956). **A study of the pathological changes produced in young mice by the virus of foot-and-mouth disease.** — *J. Path. Bact.* **72**, 299-312. [Author's summary modified.] **104**

The virus of F. & M. disease (strain Ven. 1; Vallée O type), injected i/p, produced widespread skeletal-muscle necrosis and slight myocardial necrosis in 7-day-old mice. In mice 3-4 weeks old the muscle necrosis was still severe although less widespread, and was accompanied

by myocardial and sometimes pancreatic necrosis. In 5-week-old mice muscle necrosis was only slight but there was usually some necrosis and mineralization of the suprascapular fatpads. (Areas of mineralization occurred at this site, however, in 2 controls.) One mouse showed an epithelial vesicle on the tongue.

In the two last-mentioned groups, extensive muscle regeneration occurred, by proliferation from the sarcolemma at the ends of intact muscle-segments and also from surviving sarco-



lemmal nuclei of the necrotic fibres. The changes in striated muscle and pancreas were similar in type to those described after infection with certain strains of Coxsackie virus.

PETERMANN, H. G., LANG, R. & MACKOWIAK, C. (1956). Propagation du virus de la fièvre aphteuse en culture de tissu. [**Propagation of foot and mouth disease virus in tissue culture.**] — *C.R. Acad. Sci., Paris*. **243**, 991-993. 105

Tissue cultures of calf kidney cells were suitable for the large-scale cultivation of F. & M. disease virus. [See also *V.B.* **26**, 1605 & 1943.] —R.M.

NARDELLI, L. (1956). Ergebnisse und Probleme bei der Züchtung des Maul- und Klauen-seuche-Virus in der Gewebekultur. [**Problems in connexion with the propagation of foot and mouth disease virus by tissue culture.**] — *Berl. Münch. tierärztl. Wschr.* **69**, 309-311. 106

F. & M. disease virus was grown *in vitro* on the epithelium of the tongues of cattle and evaluated according to infectivity, complement-fixing antigen and immunizing capacity. Following inoculation of the tissue with the virus, the infectivity attained its maximum value after 12 hours, the complement-fixing antigen in 18 hours and the immunizing capacity in 24 hours. N. stated that these results confirmed the conclusions of earlier workers that F. & M. disease virus has three distinct components and emphasized that the infectivity and complement-fixing antigen titres do not determine the immunizing capacity of the virus. —E.V.L.

THOONEN, J., DEVOS, A. & HOORENS, J. (1956). Ziekte van Aujeszky bij biggen. [**Aujeszky's disease in piglets.**] — *Vlaam. diergeneesk. Tijdschr.* **25**, 68-83. [In Flemish. English, French and German summaries.] 107

Sixteen piglets, aged 4 weeks, comprising 2 litters, died from Aujeszky's disease. No other cases were observed in the sows, in a litter in an adjoining pen, or in other livestock on the farm. Three piglets were examined in detail, and transmission experiments with rabbits and pigs were carried out. —R.M.

REAGAN, R. L., YANCEY, F. S. & BRUECKNER, A. L. (1956). Transmission of the Aujeszky strain of the pseudorabies virus to suckling hamsters. — *Vet. Med.* **51**, 386-387. 108

Three lactating hamsters were infected i/p with Aujeszky's disease. Eleven out of 17 of their unweaned offspring acquired the infection. —R.M.

SOURANDER, P. (1956). **Cytochemical studies on rabies inclusions (Negri bodies).** — *J. Path. Bact.* **72**, 257-265. [Abst. from author's summary.] 109

X-ray microradiography revealed a greater content of dry substance, mainly proteins, in Negri bodies than in the surrounding cytoplasm, the average difference amounting to about 50%. Ultraviolet absorption methods did not reveal nucleic acids. It is suggested that Negri bodies are not composed of virus particles but are a cytoplasmic reaction to infection with street virus.

CREAMER, A. A. & BROWN, A. L. (1956). **A simple device for holding animal heads during rabies examination.** — *Bull. World Hlth Org.* **14**, 805-806. 110

The device consisted of a 9-inch door hinge with two long flanges, one of which was screwed on to a 6in. x 2in. board. A bolt with wing nut was placed through each of the outer holes of the flanges to form a lock; either the mandible or the maxilla could then be clamped to the board. —E.V.L.

KAPLAN, M. M. (1956). **The safety, potency and use of biological products for the prevention of rabies in domestic animals.** — *Bull. Off. int. Epiz.* **46**, May. pp. 460-475. [In French pp. 441-459.] 111

The various live and inactivated vaccines in common use are enumerated. Antiserum could make a useful adjunct but its cost is prohibitive. Live virus vaccine is considered safe for use in dogs—when rabies resulted from its use it was of the paralytic type with no virus in the salivary glands and, therefore, there was no danger of spread of infection. However, it can be pathogenic, in varying degrees for other species and must, therefore, be adequately tested for pathogenicity for the species in which it is to be used. Inactivated vaccines are tested for residual virus and contaminants; antiserum is tested for contaminants. A standard potency is difficult to attain in vaccine production and so each batch has to be tested for potency before release (two tests are described). The methods of prevention and control of rabies in various species are discussed. —T.E.G.R.

SHLYAKOV, E. N., SAVICHEVA, A. G. & KHODOPROVSKI, A. Y. (1956). [**Variola in milkers in relation to cow pox.**] — *J. Microbiol., Moscow*. **27**, No. 7. pp. 55-58. [In Russian.] 112

Cow pox rapidly spread to 50 out of 120

cows and to some piglets on the same farm. It was believed to have originated from a recently vaccinated milkmaid.—R.M.

TRAUB, E. & HILMER, L. (1956). Unterschiedliche Thermoresistenz des amerikanischen Pferdeencephalitis-Virus in der virämischen Phase bei künstlich infizierten Mäusen. [Different resistance to heat of Eastern equine encephalitis virus obtained from mice during the viraemic phase of infection.]—*Zbl. Bakt. I (Orig.)* **165**, 507-513. [English, French and Russian summaries.] **113**

The virus of Eastern equine encephalomyelitis, obtained from mice during the viraemic phase of artificial infection, was more resistant to heat than the original virus. The difference in resistance was greatest in samples heated at 54°C. for 30 mins.—R.M.

LENNETTE, E. H., WIENER, A., NEFF, B. J. & HOFFMAN, M. N. (1956). A chick embryo-derived complement-fixing antigen for Western equine encephalomyelitis.—*Proc. Soc. exp. Biol., N.Y.* **92**, 575-577. [Authors' summary modified.] **114**

A c.f. antigen prepared from the fluids and membranes of infected chick embryos was highly sensitive. Since c.f. antibody in human infections with this virus is slower to appear than the neutralizing antibody, diagnosis can usually be made by the c.f. test, whereas often diagnostically significant rises in antibody are not demonstrable by the neutralization test.

SERRA, A., ITIKAWA, O., GUARINI, H., MILONE, M., AMBROSINO, C. & LIBERATORI, J. (1956). Observations clinico-pathologiques et chimico-physiques concernant "la positivité" et "la négativité" des sérums dans la D.D.C. modifiée, pour le diagnostic de l'anémie infectieuse des équidés. [The complement-fixation test in diagnosis of equine infectious anaemia.]—*Bull. Off. int. Epiz.* **46**, May, pp. 626-664. **115**

The c.f. test is considered reliable for the diagnosis of equine infections anaemia and abnormal positive reactions are attributed to faulty technique. In the case of negative reactions with sera from infected animals, fractionation of the serum proteins and blood examination are recommended.—T.E.G.R.

WAHBY, M. M. & TADROS, M. M. (1955). REPUBLIC OF EGYPT. Report of the official scientific mission to Onderstepoort, Pretoria, Union of South Africa, on the recent advances in the horsesickness researches.—*Tech. Bull. Minist. Agric., Egypt.* No. 277. pp. 13. **116**

This report describes in some detail the techniques employed at Onderstepoort for the production of freeze-dried African horsesickness vaccine. Currently, six mouse adapted attenuated strains (A501, OD, L, Vryheid, VH and 114) representing six antigenic types are included in the Onderstepoort vaccine. A seventh antigenic type is known to exist, but the strain "Karen" which has been selected for incorporation in the vaccine is not yet fully attenuated, being still in its 23rd mouse passage. The tests used to titrate potency and ensure bacterial sterility are also detailed.

—J. S. PATERSON.

REAGAN, R. L. & BRUECKNER, A. L. (1955). Electron micrographs of erythrocytes from Syrian hamsters infected with the Doll Kentucky-D strain of equine abortion virus.—*Trans. Amer. micr. Soc.* **74**, 393-397. **117**

The authors used 36 hamsters, 16 days old, in 2 groups of 18 each. One group was injected i/p with 0.5 ml. of a 20% suspension of liver from hamsters in which abortion virus derived from equine foetal lung tissue had been passaged for the 125th time. The control group was given normal hamster liver suspension. R.b.c. suspensions from each group were examined at intervals of 8, 24, 30, 48, 54, 72, 80 and 96 hours after inoculation, with the aid of an electron microscope. In samples from infected hamsters virus-like structures were seen on the surface of r.b.c. obtained 54 hours after injection. It was concluded that virus was present in the bloodstream from 48-72 hours after infection, since samples taken before or after that period appeared normal.—E.G.

ROSSMEISSL, H. (1955). Untersuchungen über das *Bact. coli* an Borna erkrankten Pferden. [Studies of *Bact. coli* in horses with Borna disease.]—*Inaug. Diss., Munich.* pp. 44. **118**

*Bact. coli* was isolated from the contents of the colon and duodenum of 29 confirmed and 3 suspected cases of Borna disease in horses. R. discussed the role of the small intestine in *Bact. coli* septicaemia and intoxication. He stated that the toxic action of *Bact. coli* probably lowered resistance to infection with Borna disease virus by the intestinal route.—E.G.

MAURER, F. D., JONES, T. C., EASTERDAY, B. & DETRAY, D. (1956). The pathology of rinderpest.—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 201-211. **119**

This is an excellent account of the gross and microscopic pathology of rinderpest based on over 400 P.M. examinations of experimental cases in cattle of both zebu and European breeds



in Africa. There are a number of black and white illustrations of the histology and a very good coloured plate of the gross lesions. The essentially superficial nature of the mouth lesions is rightly stressed, a feature which justifies the use of the word "erosion" rather than "ulcer" in describing them. The lesions of the vulva and vagina, which are a useful diagnostic sign, are not described; possibly the experimental animals used were all of the male sex. This is an article which will be greatly appreciated by all who work with this disease.

DUNCAN, D. W. & PEARSON, I. G. (1956). **Bovine malignant catarrh.**—*Aust. vet. J.* **32**, 156-161. Discussion pp. 160-161. [Authors' summary modified.] **120**

Certain features of the clinical syndrome of bovine malignant catarrh are discussed and symptoms seen for the first time in the recent series of cases in Australia are noted. Three case histories are presented. A description is given of two diseases of interest for differential diagnosis, the "mucosal disease" of cattle seen in North America and a case of rhinotracheitis found in New South Wales. Further attempts to transmit the disease at the laboratory, using cattle and rabbits, are recorded and discussed. A successful, though subclinical, transmission is claimed on histopathological grounds.

DE SOUSA DIAS, A. & LIMPO-SERRA, J. (1956). La dermatose nodulaire (Lumpy skin disease) au Mozambique. [**Lumpy skin disease in Mozambique.**]—*Bull. Off. int. Epiz.* **46**, May, pp. 612-625. [English summary.] **121**

A conventional account. The disease made its appearance in 1946. Control measures include: compulsory slaughter of affected and suspect animals; incineration or burial of affected or suspect carcasses; prohibition of the use of milk from infected herds and of the cutting up of infected or suspect carcasses; general hygienic measures and restriction of movement of animals.—T.E.G.R.

LALANNE, A. (1956). La maladie nodulaire de la peau des bovins (Lumpy skin disease) à Madagascar, ses conséquences pour l'industrie des cuirs. [**Lumpy skin disease in Madagascar in relation to the leather industry.**]—*Bull. Off. int. Epiz.* **46**, May, pp. 596-611. [English summary.] **122**

Lumpy skin disease was first diagnosed in Madagascar at the end of 1954. As a rule it was of the benign type, but severe forms with appreciable mortality were also encountered. There was some damage to the hides from the

lesions and ensuing scar formation; but loss of condition and reduced milk yield were of greater economic importance.—T.E.G.R.

I. McEWEN, A. D. & FOGGIE, A. (1956). **Enzootic abortion in ewes. Prolonged immunity following the injection of adjuvant vaccine.**—*Vet. Rec.* **68**, 686-690. [Authors' summary modified.] **123**

II. McEWEN, A. D. & HOLGATE, S. (1956). **Enzootic abortion in ewes. The recovery of the virus from the internal organs of the aborted foetus.**—*Ibid.* 690-691. [Authors' summary modified.] **124**

I. Sheep inoculated s/c with 1 ml. of a killed adjuvant vaccine produced complement-fixing and virus-neutralizing antibodies that persisted for at least 3 years. Seventeen months after vaccination, an enhanced resistance to inoculation of the virus was demonstrable in ewes during the 2nd-3rd months of pregnancy. A single injection of vaccine protected ewes against infection disseminated in the field at the time of their second and third lambing after vaccination. If the resistance to inoculation of virus is of similar duration to the persistence of antibodies, a single injection of vaccine given before the first pregnancy may therefore confer protection for the normal span of breeding life. The immunizing dose of 1 ml. of the adjuvant vaccine contains one-tenth of the quantity of antigenic material present in the two immunizing injections of the saline vaccines formerly used on experimental ewes [*V.B.* **21**, 3566], and in the field [*V.B.* **23**, 1559]. The saving in antigen and the prolonged immunity following an injection of an adjuvant vaccine make its production and field use economical. The s/c inj. of the vaccine may produce a sterile encapsulated abscess that persists. As revaccination for the maintenance of immunity is unnecessary, and entails the risk of multiple abscess formation, it should not be practised.

II. The virus of enzootic abortion may frequently be cultivated from suspensions of stomach contents, lung, liver, spleen, and kidney tissues by inoculating these into the yolk sac of 6-day chick embryos; this is a relatively economical method for isolating the virus. On several occasions only one infected embryo has been found out of a number inoculated with the same suspension. The infected embryo may still be alive shortly before the time of hatching, therefore the yolk sacs of all inoculated embryos surviving up to the time of hatching should be examined microscopically before concluding that none is infected.

LERESCHE, E. (1956). Résistance du virus de la peste porcine dans les préparations de viande. [**Viability of swine fever virus in sausages.**]—*Rev. Path. gén.* **56**, 846-884. [English and Spanish summaries.] **125**

The meat of artificially infected pigs was manufactured into various types of sausages and subjected to smoking and heating. Extracts of the products were injected into unvaccinated pigs and the following conclusions were drawn from the results: raw products must always be considered dangerous; smoking under normal conditions does not kill the virus; sausages which cannot be wholly subjected to a temp. of 80° to 82°C. for more than 5 min. are to be considered infective.—T.E.G.R.

MAYR, A. & SCHWÖBEL, W. (1956). Züchtung des Virus der ansteckenden Schweinelähmung (Teschener Krankheit) in der Gewebekultur. Vorläufige Mitteilung. [**Propagation of the virus of Teschen disease in tissue culture.**]—*Mh. Tierheilk.* **8**, 49-51. **126**

Cells of pig kidney tissue in a suitable medium grew into a thick culture in 4 to 5 days. This was then infected with Teschen disease virus which grew within the cells but did not appear in the medium; there was no cytopathogenic effect. A new culture prepared similarly was transferred after 5 days into a "maintenance" medium consisting solely of bovine amniotic fluid at pH 7.2; after infection with the virus and 3 culture passages, the cytopathogenic effect was complete and was maintained in further culture passages. Transmission tests on 4 to 6-week-old piglets with the 5th culture passage in dilutions from 1:1 to 1:100 were all positive, as they also were with the 8th passage in dilutions from 1:10 to 1:10,000.—E.V.L.

LYON, R. L. (1956). Cat-scratch fever. Reaction by intradermal test. —*Lancet*. **271**, 555-556. [Author's summary slightly modified.] **127**

A case of cat scratch fever in Scotland is described in which i/d injection of antigen renewed the features of the general infection. Four months after biting the patient, the family of cats which were responsible all showed a virus infection of the upper respiratory tract, and one had pneumonitis.

WATSON, J. R. H. (1956). Cat-scratch disease in Western Australia; a report of three cases. —*Med. J. Aust.* July 7th, 20-22. **128**

An account of 3 cases in children, the first serologically (c.f.) confirmed cases to be reported from Australia. In each there was a history of

contact with cats, but in one case there was no local skin lesion. W. considered it likely that a serological survey of veterinary practitioners and their assistants might reveal unsuspected infections.—F.E.W.

SOBEY, W. R. & TURNBULL, K. (1956). Fertility in rabbits recovering from myxomatosis.—*Aust. J. biol. Sci.* **9**, 455-461. [Authors' summary slightly modified.] **129**

The fertility of 20 bucks and 13 does which recovered from an infection of myxoma virus, strain KM.13, under laboratory conditions was examined. Six months after infection, only 50% of the bucks were found to be fertile and many of these were not fully fertile. Three females were found to be infertile, of which one could be bred from by artificial insemination, but the fertility of the remainder was unimpaired. The reduced fertility observed under laboratory conditions is not necessarily a reflection of field conditions where most of the infertile animals may not survive.

HAREL, J. (1956). Titration et étude du cycle de multiplication *in vivo* du virus fibromateux de Shope dans les tumeurs malignes du lapereau. [**Titration of the virus of Shope's fibroma in baby rabbits.**]—*C. R. Soc. Biol., Paris*. **150**, 139-142. **130**

Increasing dilutions of a virulent suspension of tissue were made in double distilled water, each dilution being tested by s/c inj. into baby rabbits. The incubation period varied from 2-3 days, at a dilution of  $10^{-3}$ , to over 15 days, at a dilution of  $10^{-9}$ . The  $ID_{50}$  was about  $10^{-7.6}$ . The multiplication cycle was studied by injecting 0.1 ml. of a virulent suspension into the membrana nictitans of new-born rabbits. Pieces of membrane were removed at regular intervals after inoculation: every 20 min. during the first 2 hours; then hourly up to 8 hours; and at 12, 24, 30 and 48 hours. Suspensions were tested on new-born rabbits. The titre dropped rapidly during the first 2 hours and was negative up to the 6th hour when infectivity reappeared and rapidly increased after the 12th hour. Kerato-conjunctivitis and proliferation of tissue in the peri-ocular tissue occurred between the 2nd and 3rd day. On the 3rd day the peri-ocular tumour was infective at  $10^{-7}$ . This cycle differed from that of Rous's tumour virus but was similar to that of other viruses, such as vaccinia. The eclipse phase also differed from that of Rous's tumour virus.

—T.E.G.R.

HAREL, J. (1956). Rôle de la résistance naturelle dans l'évolution des tumeurs provo-



quées par le virus fibromateux de Shope (Souche OA) chez le lapereau. Action de la cortisone. Transmission à la progéniture de l'immunité acquise par la mère. [**Action of cortisone on the development of Shope's fibroma and maternal transmission of immunity.**] — *C. R. Soc. Biol., Paris.* **150**, 351-353. **131**

New-born rabbits of hyperimmunized dams were susceptible to the virus. At 10 days they showed a certain degree of resistance which increased with age. Cortisone administered in the early stages of experimental infection inhibited the resistance but had no effect when given 8-10 days after inoculation.—T.E.G.R.

GLEDHILL, A. W. (1956). **Quantitative aspects of the enhancing action of eperythrozoon on the pathogenicity of mouse hepatitis virus.**—*J. gen. Microbiol.* **15**, 292-304. [Author's summary modified.] **132**

The enhanced pathogenicity of mouse hepatitis virus in mice infected with *Eperythrozoon coccoides* was shown to result from the increased probability of virus particles actively infecting cells in the presence of the blood parasite. The ratio of the probability that a virus particle will infect a cell in the absence of *E. coccoides* to the probability of its doing so in the presence of *E. coccoides* was estimated by two independent methods. The enhancing effect was attributed to the parasite increasing the ratio of active to latent infections of cells by the virus.

KILHAM, L., MASON, P. & DAVIES, J. N. P. (1956). **Host-virus relations in encephalomyocarditis (EMC) virus infections. I. Infections of wild rats. II. Myocarditis in mongooses.**—*Amer. J. trop. Med. Hyg.* **5**, 647-654 & 655-663. [Abst. from authors' summaries.] **133**

Adult black rats (*Rattus rattus*) were resistant to infection with encephalomyocarditis virus, and it was not possible to induce a carrier state in them. Multimammate rats (*Mastomys coucha*) and other field rats were highly susceptible to infection, and these mammals may be of importance in maintaining the disease in nature. Mongooses of 2 species (*Ichneumia albicauda* and *Mungus mungo*) were extremely susceptible to infection by oral and parenteral routes. The role which these animals play in maintaining the virus in nature was discussed.

SCHOENAERS, F. & COTTELEER, C. (1956). **Le diagnostic de la pseudo-peste aviaire. [Diagnosis of Newcastle disease.]**—*Ann. Méd. vét.* **100**, 271-293. [Abst. from authors' summary.] **134**

From a comparative study of four diagnostic techniques the conclusion is drawn that the agglutination of sensitized r.b.c. by specific antiserum (Geurden & Devos) is sufficiently reliable. However, isolation of the virus on chick embryo remains the method of choice.

ILERI, S. Z. (1956). **Comparaison des souches Roakin et Komorov, dans la vaccination contre la maladie de Newcastle et durée de l'immunité. [The Roakin and Komorov Newcastle disease vaccines.]**—*Bull. Off. int. Epiz.* **46**, May, pp. 476-483. [English summary.] **135**

Both vaccines conferred a solid immunity (after 4 days) lasting 8-12 months. A marked drop in egg production was observed in experimental hens and confirmed by field tests. With the Roakin vaccine the intramuscular route was preferable to the wing web. Compared with the Komarov vaccine the Roakin strain had two main disadvantages, viz., it caused paralysis in some birds, and vaccinated birds were a source of infection for susceptible birds.—T.E.G.R.

FABRICANT, J. (1956). **A modified chick embryo inoculation technique for the isolation of viruses from the respiratory tract of chickens.**—*Proc. 28th Ann. Meet. N. E. Conf. Lab. Wkrs Pullorum Dis. Contr.* Newark, Delaware. June 19 & 20, 1956. 3pp. [Mimeographed.] Author's conclusions modified.] **136**

A modified chorio-allantoic technique has been satisfactory for the isolation of the viruses of fowl pox, infectious laryngo-tracheitis, Newcastle disease and infectious bronchitis. It has proved to be a better method for the primary isolation of infectious bronchitis virus than the present allantoic technique.

JUNGHER, E., CHOMIAK, T. W. & LUGINBUHL, R. E. (1956). **Dosage response of tracheal mucosa to infectious bronchitis virus.**—*Proc. 28th Ann. Meet. N. E. Conf. Lab. Wkrs Pullorum Dis. Contr.* Newark, Delaware. June 19 & 20, 1956. 3pp. [Mimeographed.] [Authors' summary modified.] **137**

In infectious bronchitis the tracheal mucosa undergoes cyclic changes for 18-21 days: an acute phase with epithelial hypertrophy and marked oedema, a reparative one with epithelial hyperplasia and marked cellularity of the propria, and an immune phase, characterized by restoration of the epithelium and either follicular or mild focal diffuse lymphoid infiltration of the propria. The onset of symptoms, histological changes, and virus neutralizing anti-

bodies are primarily conditioned by the virus dosage, low dosages having a delaying, and high dosages an accelerating effect. The chick appears to be more susceptible than the chick embryo.

MEYER, K. F. (1956). **Problems in the control of psittacosis and ornithosis.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 412-419. 138

M. discussed the problem of adequate legislation to prevent traffic in infected birds in the U.S.A., particularly from California, where psittacosis is endemic amongst parakeets. That present measures are unsatisfactory is demonstrated by the reporting of 414 human cases during 1954, compared with an average of 45 cases each year during 1941-51. The treatment of all parakeets with chlortetracycline before sale was suggested. A new problem was infection of persons in poultry processing plants from infected fowls and turkeys.—R.M.

HEGGIE, A. D. & MORGAN, H. R. (1956). **Latent viral infection of cells in tissue culture. III. Role of certain amino acids.**—*Proc. Soc. exp. Biol., N.Y.* 92, 506-509. [Authors' summary modified.] 139

Studies on the amino-acid requirements for the activation of latent infection with psittacosis virus of chick embryo tissues cultivated *in vitro* revealed that phenylalanine and tryptophane are essential for the proliferation of the virus, whilst aspartic acid, hydroxyproline, and lysine are not. The importance of host cell metabolism to viral infection is discussed with special reference to amino-acids.

BENEDICT, A. A. & MCFARLAND, C. (1956). **Antigenic studies on the psittacosis-lymphogranuloma venereum group of viruses. IV. Studies on cutaneous hypersensitivity in chickens infected with ornithosis virus.**—*J. Immunol.* 77, 165-171. [Authors' summary modified.] 140

The time of onset of cutaneous hypersensitivity in fowls infected with psittacosis virus was related to the LD<sub>50</sub> used for infection. Hypersensitivity developed within 4 weeks and was detected for a year after infection. Complement-fixation inhibition antibody appeared earlier than detectable allergy, although after 7 weeks the serological and skin-test methods agreed in approx. 80% of the infected fowls. The skin-test antigen was resistant to periodate, trypsin, desoxyribonuclease, and heat treatment (90°C.). The complement-fixing and allergenic activities were separated by ultracentrifugal sedimentation of the c.f. antigen. The

skin-test antigen was standardized on a nitrogen basis in g. pigs and fowls.

DANE, D. S. & CLAPP, K. H. (1956). **Complement fixing antibodies to the psittacosis-lymphogranuloma group of viruses in South Australian sheep.**—*Aust. vet. J.* 32, 91-93. 141

C.f. antibodies to the psittacosis-lymphogranuloma group of viruses were present in 50% of over 400 sheep sera from various parts of South Australia. Seven high-titre sera were absorbed for group antibody and were tested with antigen of enzootic abortion of ewes: negative results suggested that the virus responsible was not identical with that causing enzootic abortion of ewes in Gt. Britain.—R. BARRY.

OOMORI, T., ISHII, S. & MATSUMOTO, M. (1956). **Infections à virus du groupe psittacose-lymphogranulomatose chez les animaux au Japon. [Diseases of animals in Japan caused by the psittacosis-lymphogranuloma viruses.]**—*Bull. Off. int. Epiz.* 46, May, pp. 153-169. [English summary.] 142

Serological tests revealed widespread incidence, among goats and cattle in Japan, of an infection of the respiratory and nervous systems caused by a virus of the psittacosis-lymphogranuloma group. In large herds of goats over 80% of the kids born during a year were affected. Of these 36% died or were destroyed and survivors had stunted growth. Cattle travelling by rail or ship appeared to be particularly susceptible. The virus is found in nasal discharges, pulmonary lesions and faeces; it may also cause peritonitis, mastitis and endometritis. The infection was confirmed among pet birds in 1954.—T.E.G.R.

OLSON, N. O., SHELTON, D. C., MUNRO, D. A. & BLETNER, R. (1956). **Preliminary blood studies in chickens with a synovitis caused by the infectious synovitis agent, pleuropneumonia-like organisms and a combination of the two agents.**—*Proc. 28th Ann. Meet. N.E. Conf. Lab. Wkrs. Pullorum Dis. Contr.* Newark, Delaware, June 19 & 20, 1956. 20 pp. [Mimeographed.] [Authors' summary and conclusion modified.] 143

The haemoglobin values and erythrocyte, leucocyte and differential leucocyte counts are given for chickens, 3-7 weeks old, infected with infectious synovitis, synovitis caused by pleuropneumonia-like organisms or both diseases simultaneously. The two diseases could not be



differentiated by blood counts or Hb values. Haematological changes associated with either disease varied with the severity of the condition.

EPSTEIN, M. A. (1956). **Intra-cellular identification of the Rous virus.**—*Nature, Lond.* **178**, 45-46. **144**

A sample of ascitic fluid was taken from each of 5 Rous ascites tumours. Each sample was divided into 2 portions; the first portion was examined in the electron microscope to establish the incidence of tumour cells with particles in the total tumour-cell population. The cells in the second portion were washed and mechanically disintegrated. The virus so released was titrated by diluting in serial tenfold steps and inoculating samples of each dilution i/d into young pullets. Where few tumour cells with particles were found, the tumour-producing activity of the virus extractable from the cells was low, while where many cells with particles were found this activity was high. The statistical correlation between these extremes taken in conjunction with the size of the particles and their appearance, made it possible to identify the particles as the Rous virus. The virus particles have only been observed grouped together in association with the vacuoles which are commonly found in Rous ascites tumour cells. Of 27,637 such cells examined by the electron microscope, 168 contained virus particles. The vacuoles have a limiting membrane and in no single instance has the virus been observed lying free in the cytoplasm.—E.V.L.

YOUNG, G. A. (1956). **Influence of virus infection, vaccination, or both on embryonic and fetal development.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955, 377-381. **145**

A discussion of foetal abnormalities resulting from the inoculation of pregnant sows with lapinized swine fever virus and of pregnant ewes with bluetongue virus attenuated in the chick embryo.—R.M.

WHITELEY, H. J. (1956). **The effect of the hair-growth cycle on the development and distribution of virus-induced lesions in the skin of the rabbit.**—*J. Path. Bact.* **72**, 1-13. [Author's summary modified.] **146**

Hair growth after plucking was studied in rabbits. The regenerating hair shafts penetrated the skin after about 12 days and the daily rate of growth was 1.1 mm. In the skin there was an increased activity in the epidermis and follicle neck up to the 4th day after plucking and a slower and more sustained increase in mitosis of the deeper parts of the follicle. Inoculation

of Shope papilloma virus caused larger and more numerous tumours in active than in quiescent skin. Lesions after i/v inj. of vaccinia virus almost always occurred in actively growing skin. Those developing in the early stages of the re-growth cycle were superficial while those developing later were localized in the depth of the follicle.

HURST, E. WESTON & HULL, R. (1956). **The chemotherapy of virus diseases, with brief consideration of the influence of dietary, hormonal and other factors in virus infections.**—*Pharmacol. Rev.* **8**, 199-263. **147**

A review, with emphasis on viruses of human beings and lab. animals. Among the chemotherapeutic agents discussed are antibiotics, sulphonamides, and thiosemicarbazone and acridine derivatives. There are 480 references.—R.M.

GUBLER, F. (1956). **Ein Virus-Antibiotikum. [An antibiotic against viruses.]**—*Tierärztl. Umsch.* **11**, 336-337. **148**

A brief account of "Virolitine," a biologically standardized preparation from cultures of saccharomycetes, particularly *Candida albicans*, first described by Castelli & Gaggini (1948). It was claimed that this agent acted against a transmissible carcinoma and against vaccinia virus, and that it was of potential value in treating virus infections.—G. P. MARSHALL.

I. ZOTOV, A. P., CHUMAKOV, M. P., MARKOV, A. A., STEPANOVA, N. I. & PETROV, A. N. (1956). **[Experimental reproduction of Q fever and serological investigations.]**—*Veterinariya, Moscow*, No. 7, pp. 44-53. [In Russian.] **149**

II. ROSTOVTSEVA, I. A. (1956). **Diagnosis of Q fever in farm animals and measures for its control.**—*Ibid.* pp. 53-56. [In Russian.] **150**

I. A detailed clinical study of experimental infection by various routes, including ticks (*Rhipicephalus bursa*), of small numbers of foals, cattle, sheep, goats and piglets. A 1% suspension of infected yolk sac was used at a dosage of 10 ml./20 kg. body wt. for the parenteral routes. Complement-fixing antibodies first appeared in the blood 4-26 days after infection and persisted for 11-14 months. The titre during the first 3 months ranged from 1:10 to 1:640.

II. Q fever has been reported amongst farm animals in the R.S.F.S.R. and in the Kazakh, Uzbek, Turkmen and Ukrainian Republics. The incidence was not stated. Ticks were considered to be the chief vectors. R. dis-

cussed diagnosis, and suggested a control system, based on segregation and isolation of animals reacting to the c.f. test.—R.M.

ZEITLENOK, N. A. & PILLE, E. R. (1956). [Observations on human cases of Q fever and reservoirs of the causal organism in the Altai region.]—*J. Microbiol., Moscow*. 27, No. 7. pp. 17-22. [In Russian.] 151

Complement-fixing Q fever antibodies were present in the sera of 3 out of 8 yaks, 7 out of 25 cows, and 8 out of 25 sheep in the Kosh-Agach district of the Altai mountains.—R.M.

KULAGIN, S. M., SOKOLOVA, N. F. & FEDOROVA, N. I. (1956). [Resistance of *Rickettsia*

*burneti* to some physical and chemical agents.]—*J. Microbiol., Moscow*. 27, No. 7. pp. 28-32. [In Russian.] 152

*R. burneti* survived the following treatments:— exposure for 5 hours to ultra-violet light from a 15 watt lamp 1 metre distant; 2% chloramin soln. for 1 min. or 0.5% soln. for 30 min.; 1% soln. phenol for 30 min. or 3% soln. for 1 min.; 3% caustic soda soln. for 5 min. It was killed by exposure for from 1 to 5 min. to either 3-5% phenol soln., 3% chloramine, 2% bleaching powder soln., or 0.05% hexylresorcin. Boiling for 1 min. also killed the organisms.—R.M.

See also absts. 325 (report, Canada); 326 (report, Basutoland); 327 (report, Zanzibar).

## IMMUNITY

KORNGOLD, L. (1956). Immunological cross-reactions studied by the Ouchterlony gel diffusion technique. Theory and practice.—*J. Immunol.* 77, 119-122. [Author's summary modified.] 153

The theory is discussed of the precipitin patterns obtained with cross-reacting systems, as studied by the Ouchterlony gel diffusion technique. The conditions that result in single or double spurs are described, and experimental examples are given.

TANAKA, N. & LEDUC, E. H. (1956). A study of the cellular distribution of Forssman antigen in various species.—*J. Immunol.* 77, 198-212. [Authors' summary slightly modified.] 154

The fluorescein-labelled antibody technique was used for the localization of Forssman antigen in the tissues of g. pig, cat, dog, mouse, and fowl. Antisera to sheep blood cells and to horse kidney were prepared in rabbits. The globulin fractions of the sera were labelled with fluorescein isocyanate. The specificity of the stain was established by several methods. The Forssman antigen was found in the form of droplets in the endothelium and adventitial connective tissues of the blood vessels in all organs of each species. Species differences in the distribution of Forssman antigen in other tissues are described.

WEIL, A. J., KOTSEVALOV, O. & WILSON, L. (1956). Antigens of human seminal plasma.—*Proc. Soc. exp. Biol., N.Y.* 92, 606-610. [Authors' summary modified.] 155

Rabbits and cocks injected with whole human semen, seminal plasma and washed

spermatozoa produced antisera which showed a high degree of specificity for seminal antigens as compared with human serum and organ extracts. However, a distinction between seminal plasma and spermatozoa could not be obtained by immunological techniques. The dominant antigenic material appears to be derived from the fluid constituents of the semen rather than from the spermatozoa. Human sera which agglutinate spermatozoa do not react in the complement-fixation test with seminal plasma or spermatozoa, but they produce a zone of precipitation with seminal plasma as antigen in the agar diffusion test.

GENGOZIAN, N. & WOLFE, H. R. (1956). Precipitin production in chickens. XIV. Effect of dilution of chicken antisera on the amount of precipitation.—*J. Immunol.* 77, 172-180. [Authors' summary copied *verbatim*.] 156

Dilution of chicken antisera prior to combination with the antigen causes a marked decrease in the antibody nitrogen precipitation. Application of the data to an adsorption equation permitted formulation of a "Desorption Equation" which was fairly successful in predicting antibody nitrogen values for diluted sera. This decrease in precipitation was also apparent with volume change of the undiluted reacting system. The explanation offered for the observed phenomenon was based on an adsorption mechanism along with multiplicity of antibody types believed to be present in antisera.

HALLIDAY, R. (1956). The termination of the capacity of young rats to absorb antibody from the milk.—*Proc. roy. Soc. Ser. B.* 145,



179-185. [Author's summary slightly modified.] 157

Young rats cease to absorb antibodies from milk or immune serum in the gut at 20 days of age. Yet antibodies continue to be secreted in the milk of immune mother rats after the young have reached this age. The cessation of absorption by the young is comparatively sudden and shows little age variation. The possibility that it is brought about by extrinsic factors in the food was investigated. Young rats fostered on the mothers of litters older than themselves continued to absorb antibodies beyond the age at which the foster-mother's own young would have ceased to do so. Conversely, young rats fostered on the mothers of litters younger than themselves ceased to absorb antibodies at the normal age, although the foster-mother's own young would have continued to do so. Young rats prevented from taking solid food and compelled to live entirely on milk beyond the normal age nevertheless ceased to absorb antibodies at 20 days of age. Conversely, young rats fed on solid food before the normal age continued to absorb antibodies until 20 days of age. Hence it does not appear that the food is responsible for bringing about the change in the permeability of the gut of the young rat to antibodies. Unweaned rats given a single injection of *Salmonella pullorum* at from 10 to 23 days of age produced comparatively high titres of circulating antibody after 8 or 10 days.

See also absts. 9-10 (anthrax); 14, 17 & 20-22 (TB.); 23-29 (Johne's disease); 31 (Past. pseudotuberculosis infection in hares in France); 38 (fowl typhoid); 40 (salmonellosis in ducks and geese); 46-54 (brucellosis); 79 (bovine contagious pleuropneumonia); 114 (equine encephalomyelitis); 115 (E.I.A.); 123 (ovine virus abortion); 131 (maternal transfer of immunity in Shope's fibroma); 135 (Newcastle disease); 141 (P.P.L.O.); 182 (helminths).

MUELLER, C. B. & MASON, A. D. (1956). The pathogenesis of acute renal failure following incompatible blood transfusion. An experimental study.—*Amer. J. clin. Path.* 26, 705-720. [Interlingua summary. Authors' summary modified.] 158

Lysed canine blood in quantities as large as 2.5 g. of haemoglobin per kg. was administered i/v to dogs without recognized deleterious effect. The initial infusion of human blood to dogs resulted in no significant clinical response or disease of the kidneys. There was rapid, apparently complete haemolysis of the human blood, and the excretion of Hb was comparable to that observed with lysed canine blood. Infusion of relatively small quantities of human blood in sensitized dogs led to conspicuous signs of anaphylactic-like shock and collapse, and, in some animals, to impairment of renal function and anatomical alterations in the renal tubules. Some of the animals died immediately, others recovered completely with no signs of damage to the kidneys, and still others had impairment of renal function that caused a temporary rise of urea nitrogen in the blood and reduced the clearance of p-aminohippurate and inulin. Studies of several components failed to disclose the essential difference between haemolytic anaphylactoid reactions that result in renal failure and experimental haemoglobinemia (of the same and other varieties) that does not.

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

MACLEOD, J. & DONNELLY, J. (1956). The geographical distribution of blowflies in Great Britain.—*Bull. ent. Res.* 47, 597-619. [Authors' summary modified.] 159

The distribution in Britain of carrion-attracted Calliphorinae was examined by simultaneous trappings, under standard conditions, at 51 stations so distributed as to be more or less representative of the country. From published records and other sources, the known distribution of each species by counties was delimited and compared with the observed results.

HADAWAY, A. B. (1956). Cumulative effect of sub-lethal doses of insecticides on houseflies.—*Nature, Lond.* 178, 149-150. 160

Female flies not previously exposed to an insecticide were each treated twice, at varying intervals, with 0.25% of the  $\gamma$ -isomer of benzene

hexachloride (B.H.C.), 1% D.D.T., 0.07% dieldrin and 0.25% diazinon. With the exception of the B.H.C., the two treatments were fully cumulative even when the interval between them was 48 hours. Smaller volumes of insecticide were given on 6 successive days and the LD<sub>50</sub> of survivors was tested. The degree of tolerance was lowest for diazinon and highest for B.H.C.—JAS. G. O'SULLIVAN.

FAIRCLOUGH, R. (1956). Insecticidal fogs against tsetse flies on trains.—*Bull. ent. Res.* 47, 193-196. [Author's summary modified.] 161

Experiments were carried out in Kenya to find whether insecticidal smokes would remove tsetse flies, in this instance almost all *Glossina longipennis*, carried by trains. "Fogging" was done by two operators, each with a machine, starting from opposite ends of trains halted at a station 20 miles inside a fly-infested area and

assessment was by routine catches at a station 20 miles outside it. "Fogging" reduced the number of flies found on trains by 60 to 70%. As the trains had to pass through a light fly infestation after treatment, the real kill is likely to have been higher. The cost of such partial reduction is believed to be considerably higher than would be that of therapeutic control of trypanosomiasis in the affected region. [See also Lewis, E. A. (1950). Tsetse flies carried by railway trains in Kenya Colony.—*Bull. ent. Res.* 40, pp. 511–531.]

WHITEHEAD, G. B. (1956). **D.D.T. resistance in the blue tick, *Boophilus decoloratus*, Koch.**

—*J. S. Afr. vet. med. Ass.* 27, 117–120. 162

A strain of *B. decoloratus* which was resis-

tant to sodium arsenite and the  $\gamma$ -isomer of benzene hexachloride became resistant also to D.D.T. W. suggests that the mechanism of resistance is different in each case and that environmental conditions are important.

—JAS. G. O'SULLIVAN.

NAZAROV, G. S. (1956). [Treatment of notoedric mange in rabbits and cats with insecticidal dusting powder. — *Veterinariya, Moscow*. 33, No. 6. pp. 43–46. [In Russian.] 163

Notoedric mange in rabbits and cats was stated to have been cured by 3 applications, at intervals of 5–7 days, of a mixture of benzene hexachloride (6 parts), sulphur (50 parts) and talc (44 parts).—R.M.

See also absts. 63 (flies as transmitters of infectious diseases); 96 (role of *Hyalomma scupense* in theileriasis); 97 (vectors of piroplasms); 323 (report, Lister Institute).

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

GREGOIRE, C., POUPLARD, L., COTTELEER, C., SCHYNS, P., THOMAS, J. & DEBERDT, A. (1956). Nouvelle méthode de diagnostic. La distomatose. [A new method for diagnosis of fascioliasis.]—*Ann. Méd. vét.* 100, 294–303. 164

This method is based on the fact that the eggs of fasciola sediment more rapidly than faecal matter and eggs of other helminths. The suspension of faeces is introduced at the upper end of a long glass tube containing water. An opaque cloud forms and slowly descends down the tube, going through a rubber tube fitted with a clamp and into the end glass tube which is fitted with a stopcock. The rubber tube is clamped when the residue has passed through. The stopcock then releases material for examination. The method is considered simple, rapid and reliable.—T.E.G.R.

COYLE, T. J. (1956). **Liver fluke in Uganda.**—*Bull. Epiz. Dis. Afr.* 4, 47–55. [French summary p. 121.] 165

Although "black disease" (*Clostridium oedematiens*) has not been reported, fascioliasis caused by *Fasciola gigantica* is a serious and increasing problem. During different years the number of condemned livers at Kampala abattoir has varied between 4% and 45%. *Limnaea natalensis* is stated to be the principal vector. The snail lives in clean water and favours good oxygenation but can tolerate dense weed. It is not resistant to drought. Dams are a favourite habitat and the snail may live in the deep channels of grass swamps, being spread over wide areas in time of flood. Pro-

vision of new dams for the use of stock may increase the danger of liver fluke. It is essential to prevent fresh animal faeces from entering the water. Chemical control of the snails is probably impracticable. Regular dosing of cattle in the dry season is a possibility. Other means of control are considered.—S. BRIAN KENDALL.

VERGANI, F. (1955). Datos biológicos experimentales sobre el caracol *Limnaea (Galba) cubensis* P. 1911. [Experimental study of the biology of *Limnaea cubensis*, snail host of *Fasciola hepatica* in Venezuela.] — *Bol. Inst. Invest. vet. Caracas*. 7, No. 23. pp. 34–55. [English summary.] 166

Live snails could be collected from infested sites at any time of the year. In the laboratory, specimens lived for 127–212 days. From May–October single snails laid up to 1,530 eggs. The eggs were killed by drought, but adults were resistant for 7 months. At 7°C. the development of eggs was retarded, but adults were resistant for 5 months. Both eggs and adults were killed by a temp. of –7°C. Both adults and eggs were killed by: submersion in sodium pentachlorophenate, 100 p.p.m. for 20 min., 200 p.p.m. for 10 min., 5 p.p.m. for 24 hours; by spraying with a soln. of 800 p.p.m. In breeding pans (simulating the natural habitat) they were killed by 100 p.p.m. sprayed at the rate of 1.5 ml. per 10 sq. cm. of soil surface. When 500 p.p.m. was sprayed at the same rate, residual toxicity remained after 24 hours.—F.E.W.

KATIYAR, R. D. (1956). **A preliminary report on cymbiformiasis in sheep and goats of Uttar**



**Pradesh Hills.**—*Indian J. vet. Sci.* **26**, 21-26. **167**

Heavy infestations of the small intestines with the fluke, *Cymbiforma indica*, were associated with diarrhoea and mortality in sheep and goats in the Kumaon hills. Treatment with carbon tetrachloride and hexachlorethane saved many affected animals.—R. N. MOHAN.

CHANG-LING LEE & LEWERT, R. M. (1956). **The maintenance of *Schistosoma mansoni* in the laboratory.** — *J. infect. Dis.* **99**, 15-20. [Authors' summary modified.] **168**

Methods for the routine maintenance of *S. mansoni* in the authors' laboratory involve equipment and procedures such that large or small colonies of *Australorbis* snails can be grown efficiently with a minimum of effort and time. Refrigerator vegetable trays are used as aquaria and the snails are provided only with calcium alginate food which is placed on a floating net. No sand or vegetation is necessary. The food is prepared efficiently in quantity as a continuous filament and can be stored indefinitely. The exposure of mice to cercariae as well as the problem of handling contaminated articles are discussed.

LARSH, J. E., JR., RACE, G. J. & JEFFRIES, W. B. (1956). **The association in young mice of intestinal inflammation and the loss of adult worms following an initial infection with *Trichinella spiralis*.** — *J. infect. Dis.* **99**, 63-71. [Authors' summary modified.] **169**

Young mice given an initial infection with larvae of *T. spiralis* lost a significant number of adult worms between 15 and 17 days after infection. Related to this loss of worms was the development in the intestinal tissue of a characteristic cellular reaction, which reached its peak at 11 days after infection. Evidence is presented that this reaction is a manifestation of acquired immunity differing only in the time of its initiation and in degree from the reaction in old mice given a single infection and from the reaction in those strongly immunized by previous infections. These results indicate that following initial infection of young and old mice the slower elimination of adult *T. spiralis* from the young mice is due to their inability to acquire immunity as rapidly as the old mice.

SHULTS, R. S. & BONDAREVA, V. I. (1954). **[Problems of phenothiazine treatment of horses infested with adult strongyles.]** — *Trud. Inst. Vet., Alma-Ata*, **6**, 539-552. [In Russian.] **170**

The most effective single dose of phenothiazine was 20-40 g. for adult horses and 12 g.

for foals weighing 150 kg. Repeated daily doses of 10-15 mg. per kg. body wt. resulted in a reduction in the worm-egg count of the faeces after 2-3 doses, but sometimes there was an increase in egg count after 10-17 doses. After cessation of treatment, the effect of the drug persisted for from 2½ weeks to 2 months or more. The minimum dosage effective against adult strongyles was 5 mg. per kg. body wt., and good results were obtained from field trials, using this dosage. An average of 3.5% of strongyle eggs were viable after treatment, compared with 28% viable before treatment.—R.M.

RIEDEL, B. B. (1955). **The longevity and incidence of parasitic nematode larvae of cattle on fescue and ryegrass.** — *Trans. Amer. micr. Soc.* **74**, 229-232. **171**

Groups of young steers, passing about equal amounts of nematode ova, were allowed to graze from December to April on two pasture plots of 5 acres each, one of ryegrass and the other of fescue. Larvae were collected at monthly intervals from both pastures. At first it was found that the number of larvae collected from fescue pasture was five times that of larvae from the ryegrass plot. Larval contamination of the fescue plot remained about the same at subsequent checks, whereas from the ryegrass pasture larvae disappeared almost completely. This was believed to have been caused by the deterioration of the ryegrass plot during July which left the ground exposed to the sun, whilst the more compact growth of fescue favoured survival of larvae.—E.G.

BREMNER, K. C. (1955). **Cytological studies on the specific distinctness of the ovine and bovine "strains" of the nematode *Haemonchus contortus* (Rudolphi) Cobb (Nematoda: Trichostrongylidae).** — *Aust. J. Zool.* **3**, 312-323. **172**

From squash preparations of gonad tips it was found that the chromosome number was the same for worms from either cattle or sheep, namely  $2n=11(\sigma)$ ,  $12(\varphi)$ . The autosomes were  $3\mu$  long, but whereas the X-chromosomes in worms from cattle were  $8\mu$  long; those in worms from sheep were the same size as the autosomes. Small numbers of fertile hybrid females were obtained from a crossbreeding experiment and from a natural infestation of both cattle and sheep forms. It is suggested that genetically determined agencies may restrict the inbreeding of populations of the two forms, and that this, together with the available evidence on host-specificity, supports the elevation of the strains to specific status.—R. I. SOMMERVILLE.

NEKLYUDOV, V. N., BOLKHOVITINOV, D. V. & SOMINSKI, Z. F. (1956). [Pathogenesis of *Haemonchus* infestation in sheep.] — *Veterinariya, Moscow*. 33, No. 7. pp. 66-69. [In Russian.] 173

Fifteen sheep were infected with single or repeated doses of infective larvae of *H. contortus*. The total number of larvae administered to each sheep ranged from 4,000 to 106,000. Five of them were unweaned lambs; the remainder were 3-10 months old and 6 had a normal diet while 4 had a deficient diet. The clinical haematological and pathological findings were described. It was concluded that *Haemonchus* infestation affected the body as a whole, owing to the depressive action on the central nervous system of substances produced by the parasites. The progressive anaemia which developed was aplastic, not haemolytic, and may have resulted from a disturbance of neuro-humoral regulation of the haemopoietic system. There were also disturbances in carbohydrate metabolism, causing decrease in the glycogen reserves of the liver and a change in the pH of abomasum contents towards neutrality. Suggested treatment of severe cases was, apart from sound nutrition, glucose-insulin therapy and addition of HCl to the drinking water.—R.M.

SPEDDING, C. R. W. & BROWN, T. H. (1956). The "spring rise" in the nematode egg-count of sheep.—*J. Helminth.* 29, 171-178. 174

The nematode infestations of groups of sheep were controlled by the use of worm free paddocks, or pens, so that the causes for the "spring rise" could be determined. The "spring rise" in the numbers of worm eggs was observed when there was no increase in the worm burden. It is deduced therefore that the worms present in the sheep increased their egg output. The increase was greater when the host was under stress because of lambing and/or poor nutrition.—D. W. JOLLY.

SPEDDING, C. R. W. (1956). The control of worm-infestation in sheep by grazing management. — *J. Helminth.* 29, 179-186. [Author's summary modified] 175

A method of management of sheep at pasture is described which appeared to be successful in preventing re-infection by nematodes parasitic in the alimentary tract, except *Strongyloides papillosus*. Subclinical infestation in lambs at pasture depressed the live-weight gain. Re-seeded pasture sown on land that had carried sheep 11 months before, appeared to be free from worms.

ALLEN, P. H. & OLDFIELD, J. E. (1956). Phenothiazine treatment of fattening lambs in drylot.—*Amer. J. vet. Res.* 17, 243-245. 176

Forty lambs were taken from worm infested pastures, kept in pens and fed concentrates. Their worm burden which was described as "moderately heavy" (1000-2000 worms), contained *Ostertagia*, *Haemonchus*, *Trichostrongylus*, *Cooperia*, and *Bunostomum* spp. Half the lambs were given two doses each of 25 g. phenothiazine at 14 days' interval and half were left untreated. When the lambs were slaughtered 70 days after the first phenothiazine dosing, the average number of worms per treated lamb was under 500 compared with 1000-2000 for the untreated lamb. The average weight increase of the treated lambs during the 70-day period was 13-16 lb. compared with 3.1 lb. for the controls.—D. W. JOLLY.

MICHEL, J. F. & PARFITT, J. W. (1956). An experimental study of the epidemiology of parasitic bronchitis in calves.—*Vet. Rec.* 68, 706-710. [Authors' summary modified.] 177

An experiment is described in which a small paddock was infected with *D. viviparus*, a susceptible calf being introduced every 5 weeks. In this experimental situation it appeared that the extent to which larvae in faeces become larvae on herbage is the chief factor determining the herbage infestation which, in consequence, follows a seasonal pattern. The fate of the calf would seem to be entirely dependent on the degree of herbage infestation over the first 9 days it spends in the paddock, and to be uninfluenced by subsequent changes in herbage infestation. These results and their implications are discussed in the light of the results of other experiments on host resistance and the bionomics of the larvae.

BOEV, S. N. (1954). [Anthelmintic treatment as part of the system to control *Dictyocaulus* infestation in sheep in Kazakhstan.]—*Trud. Inst. Vet., Alma-Ata*. 6, 514-529. [In Russian.] 178

Intratracheal injection of iodine soln. was ineffective against larvae of *Dictyocaulus*, but it reduced mortality from endemic pneumonia caused by lungworms with secondary bacterial infection. Curative treatment of a flock was performed in late summer and autumn, except for adults and lambs of the previous year, which were treated in late spring or early summer. Prophylactic treatment of lambs was performed during summer and autumn, each lamb being given 2 or 3 injections.—R.M.



SARWAR, M. M. & RAUF, A. (1956). Incidence and bionomics of *Dictyocaulus filaria* in the Punjab-Pakistan.—*Brit. vet. J.* **112**, 200-212. 179

A survey of *D. filaria* by routine faecal counts and P.M. examinations showed that the infection could be detected clinically during the winter months only. Infective larvae were rapidly killed by the high temperatures (28° to 30°C.), and low humidity, which prevail in N.W. India during the summer. There was no evidence of an age resistance in sheep. Treatment of affected animals with intratracheal injections of combinations of iodine and glycerol was unsatisfactory, although there appeared to be transient response in some cases.

—D. W. JOLLY.

BREMNER, K. C. (1955). Morphological studies on the microfilariae of *Onchocerca gibsoni* Cleland & Johnston and *Onchocerca gutturosa* Neumann (Nematoda: Filarioidea).—*Aust. J. Zool.* **3**, 324-330. 180

A study was made of the value of measurements and of the cephalic and caudal nuclei as criteria for the differentiation of microfilariae of *O. gibsoni* and *O. gutturosa*. Only measurements of total length proved of value. Larvae of the two species did not change in length between the time of emergence from the female and their appearance in the skin. Those of

*O. gibsoni* were 240-280  $\mu$  (mean 266  $\mu$ ) long, whereas those of *O. gutturosa* were 200-260  $\mu$  (mean 224.5  $\mu$ ) long.—R. I. SOMMERVILLE.

MOHIYUDDIN, S. (1956). Enzootic bovine paraplegia in some Malnad tracts (hilly and heavy rainfall region) of Mysore State with particular reference to cerebrospinal nematodiasis as its probable cause.—*Indian J. vet. Sci.* **26**, 1-19. 181

M. observed "immature nematodes" and softening of white matter in the lumbar spinal cord of two cows suddenly affected with complete paralysis of limbs, ending in death in 2 to 3 days. He suspected that the enzootic paraplegia of cattle which occurs in the hilly and heavy-rainfall areas of Mysore, Bombay and Madras States (Western Ghats) was probably a cerebrospinal nematodiasis.—R. N. MOHAN.

SHULTS, R. S. & ANDREEVA, N. K. (1954). [Some rules of immunity to helminths.] — *Trud. Inst. Vet., Alma-Ata.* **6**, 468-491. [In Russian.] 182

A discussion of factors controlling the intensity of infestation, differences in growth of the parasite as an indication of the immunological state of the host, and susceptibility or resistance of individual animals to infestation, with references to Russian work.—R.M.

See also abstr. 32 (role of helminths in the transmission of swine erysipelas).

## SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

TARANOV, M. T. (1956). [Test for the diagnosis of occult forms of melanosarcoma in horses.] —*Veterinariya, Moscow.* **33**, No. 8, pp. 29-30. [In Russian.] 183

T. described a test for the diagnosis of melanoma of the internal organs, based on the assumption that the serum of an affected horse has greater tyrosinase activity than the serum of a healthy horse. 20 ml. of the serum under test was placed in a glass cylinder. In an identical cylinder was 20 ml. serum from a healthy horse. 2 ml. of 1% soln. pyrogallol was pipetted on to the surface of each serum. After 2-3 hours at room temp. a colour reaction had developed. In the case of a horse with melanoma the colour reaction extended about twice as far down the cylinder as in the case of a healthy horse. He stated that 30-35% of all horses in the Klin district (near Moscow) had melanoma.—R.M.

MAYER, H. F. & DÍAZ, B. E. (1955). Estudio de un carcinoma-epizootico en cabras. [Study of a carcinoma epidemic in goats.] —*An. Inst. Med. reg., Tucuman.* **4**, 185-193. [French summary.] 184

Twelve goats out of a flock of 180 had epithelioma of the skin in the perianal and vulval regions. Inoculation of tumour extracts into the anal region of 2 goats did not transmit the tumour.—R.M.

TAMASCHKE, C. (1955). Über die Nebennierengeschwülste des Hundes. [Adrenal tumours in dogs.] —*Virchows Arch.* **327**, 480-489. 185

T. studied the literature on adrenal tumours in domestic animals. Of 368 references listed 166 dealt with adrenal tumours in cattle, 103 in dogs, 78 in horses, 11 in pigs and 10 in sheep. It is, however, stated that of all neo-

plasms occurring in domestic animals those involving the adrenal glands were 13.4% in cattle, 8.8% in sheep, 6.4% in horses 5.9% in pigs and 5.4% in dogs, which would appear to indicate a certain predisposition in cattle and sheep. Details are given of a malignant cortical adenoma, a generalized cortical carcinoma, a medullary phaeochromocytoma and a medullary metastasizing tumour in 4 dogs seen by the author.—E.G.

JENSEN, E. C. (1956). **Nitrogen mustard as a treatment for canine malignant lymphoma. Parts I. & II.**—*Iowa St. Coll. Vet.* **18**, 89-91 & 137-140. **186**

Six dogs with malignant lymphoma [pseudo-Hodgkin's disease] were treated with nitrogen mustard; in 5 cases, L-cysteine was given in addition, to counteract the effects of nitrogen mustard in producing leucopenia and nausea and vomiting. In 2 cases, considered to be in an advanced stage of the disease, no regression was noted, but in the other 4, remissions of a temporary nature were observed, although the dogs died or were destroyed within 3 to 16 weeks of the treatment. It is considered that nitrogen mustard treatment may be palliative.

—E. COTCHIN.

ANON. (1956). **The lymphocyte: friend or foe of the malignant cell?**—*Lancet*. **271**, 452-453. **187**

Humble *et al.* [(1956). *Brit. J. Haematol.*

**2**, 283], studying the interaction between lymphocytes and other cells in serum-agar tissue cultures, observed an apparent affinity of the lymphocytes for malignant cells and for cells in mitosis, as they appeared to become attached to cell surfaces, and to wander in the cytoplasm ("emperipolesis"), or to cross the cytoplasmic bridge at the end of cell division. It is suggested that the lymphocyte is a "mobile source of enzymes or metabolites which are particularly in demand by actively growing and dividing cells" and "functions in malignant disease as an agent hostile to the interests of the host since normally it furthers the growth and division of cells, regardless of their nature."

—E. COTCHIN.

COLE, R. K. & HUTT, F. B. (1956). **Parents' age unrelated to leucosis in progeny.**—*Poult. Sci.* **35**, 729-731. **188**

From a study of records of instances in which a hen was mated to the same male in 2 successive years, it was found that the daughters of the first and second mating differed neither in total mortality, nor in deaths from leucosis. It is concluded, contrary to the view of Coles [V.B. **26**, 2027] that the age of parents does not in itself affect the susceptibility of the offspring to leucosis. It is pointed out that in flocks undergoing natural selection, the older hens should be genetically more resistant than the more susceptible birds eliminated as pullets.

—E. COTCHIN.

## NUTRITIONAL AND METABOLIC DISORDERS

PIETERSE, P. J. S. & ANDREWS, F. N. (1956). **The estrogenic activity of legume, grass, and corn silage.**—*J. Dairy Sci.* **39**, 81-89. [Abst. from authors' summary.] **189**

Lucerne silage had greater oestrogenic activity than freshly cut lucerne. Maize or brome silages were not oestrogenic. A mixture of the three silages increased in oestrogenic activity during fermentation with either sodium metabisulphide or molasses as a preservative. Lucerne silage was more oestrogenic at the bottom than at the top of the silo and when preserved with molasses. There was little difference between the silage without preservative and that in which ground maize was used. All 3 silages were more oestrogenic than fresh lucerne. Isoflavone genistein became more oestrogenic when treated with a 1.5% KOH soln. of 95% ethanol.

BASHKIROV, A. A., MALAKHOV, N. V. & BAKULOV, I. (1956). [Some problems asso-

ciated with feeding maize to cattle.]—*Veterinariya, Moscow*. **33**, No. 8. p. 82-84. [In Russian.] **190**

These authors each reported their own observations on mass outbreaks of acute maize poisoning in cattle, occurring in August and September, and only when the cobs were at a stage of maturity described as "milky-waxy." Symptoms were initial excitement followed by paresis, depression and coma: they resembled those of milk fever. Symptoms commenced 12-18 hours after grazing maize or 4-6 hours after grazing aftermath. Cases terminated in death after about 24 hours, or recovery after 3-5 days' illness. Bashkirov suggested that maize became toxic only as a result of unfavourable environmental conditions, such as wet weather. Toxicity apparently disappeared 1½-2 hours after the maize was cut. Treatment adopted was i/v inj. of glucose soln., combined with administration of stimulants, and other symptomatic measures.—R.M.



MCCREA, M. R. & TRIBE, D. E. (1956). **Observations on the composition of an experimental semi-synthetic diet for baby pigs.**—*Vet. Rec.* **68**, 741-748. [Authors' summary modified.] 191

An account of a three-year study in which 314 piglets removed from their dams between 24 and 72 hours of age, were reared on semi-synthetic diets. The compositions of the diets used are discussed and the methods of housing and management described.

LOCKART, L. W. (1956). **The reaction of primary and secondary wool fibres to changes in nutrition.**—*Aust. J. agric. Res.* **7**, 147-151. [Author's summary copied *verbatim*.] 192

The responses of primary and secondary wool fibres to changes of nutrition are in proportion to their cross-sectional areas. No indication was found that primary fibres compete more effectively with secondary fibres at a low level of wool production than at a high one.

JAFFE, W. P. & WAKELAM, J. A. (1956). **Unidentified chick growth factors in fermentation by-products.**—*Nature, Lond.* **178**, 414. 193

A preliminary investigation of the growth factors contained in "dried solubles" recovered from malt whisky distilleries was carried out. —T.E.G.R.

FERRANDO, R., LALLOUETTE, P., BOURDERON, G. & FROGET, J. (1956). **Influence d'un facteur de croissance du colibacille extrait d'*Aspergillus flavus* sur le gain de poids et la flore intestinale. [Action of a growth factor extracted from *Aspergillus flavus* on body weight gain and the intestinal flora.]**—*C. R. Acad. Sci. Paris.* **243**, 537-539. 194

Oral administration of a growth-promoting extract of *Aspergillus flavus* to mice and pigs increased the number of coliform bacteria in the faeces.—R.M.

GRIMBERGEN, A. H. M. (1956). **De invloed van antibiotica op de darmflora. (Literatuuroverzicht en eigen onderzoek). [Influence of antibiotics on the intestinal flora.]**—*Tijdschr. Diergeneesk.* **81**, 549-568. [In Dutch. English and German summaries.] 195

The administration of 10 p.p.m. procaine penicillin in the food to chicks favoured the multiplication of lactobacilli. In one experiment in which 10-15 p.p.m. terramycin was given in the food, coliform bacteria developed resistance to this antibiotic. When the resistant bacteria were given in the food, they developed

more rapidly in chicks receiving terramycin than in those receiving no antibiotic.—R.M.

LOGAN, V. S., MILES, V. J. & BRISSON, G. J. (1956). **Influence of an aureomycin feed supplement on growth and thrift of dairy calves and on ration digestibility.**—*Canad. J. agric. Sci.* **36**, 302-308. 196

In feeding trials with 40 calves, groups were fed as follows:—(1) a control diet of whole milk, calf starter and hay; (2) the control diet with 12 mg. aureomycin per 100 lb. body wt. added daily to the milk for 12 weeks; (3) the same as (2) except that aureomycin was given for the first 6 weeks only; (4) the control diet with 12 mg. aureomycin added daily to the calf starter. The antibiotic supplement did not influence growth, thrift or food consumption of the calves, nor was there any alteration in digestibility. With good management and feeding practices the addition of aureomycin to the ration may not influence the growth of dairy calves.—A. GREIG.

BEVANS, M. & MOSBACH, E. H. (1956). **Biological studies of dihydrocholesterol. Production of biliary concretions and inflammatory lesions of the biliary tract in rabbits.**—*Arch. Path.* **62**, 112-117. [Authors' summary modified.] 197

Rabbits receiving 250 to 1000 mg. of dihydrocholesterol in the food daily for periods of 2-6 weeks consistently developed biliary concretions and a mild oedema of the gall-bladder and large bile ducts. The addition of 12% olive oil to the diet increased the concentration of liver lipid but not the severity of the lesions of the biliary tract. None of the control animals, nor animals receiving cholesterol or  $\beta$ -sitosterol exhibited lesions of the biliary tract.

MOSBACH, E. H. & BEVANS, M. (1956). **Formation of gall stones in rabbits fed  $3\beta$ -cholestanol.**—*Arch. Biochem.* **63**, 258-259. 198

Concretions consisting of glycodesoxycholic and glycocholic acids formed in the gall-bladder of 8 rabbits, given 1 g.  $3\beta$ -cholestanol daily for 3 weeks.—R.M.

PENNINGTON, R. J. & SUTHERLAND, T. M. (1956). **The metabolism of short-chain fatty acids in the sheep. IV. The pathway of propionate metabolism in rumen epithelial tissue.**—*Biochem. J.* **63**, 618-628. 199

Propionate metabolism would appear to involve the fixation of carbon dioxide to form succinate. Propionate suppressed the formation of ketone-bodies from pyruvate.

—JOHN SEAMER.

I. VAN DEN BERGHE, L. (1955). Kwashiorkor provoqué chez le porc. [**Experimental Kwashiorkor in pigs.**]—*Folia sci. afr. cent.* **1**, 17. **200**

II. VAN DEN BERGHE, L. (1955). Le Kwashiorkor expérimental du porc et le facteur L. [**A milk factor in experimental Kwashiorkor in pigs.**]—*Ibid.* **2**, 13. **201**

I & II. Piglets fed a diet of tapioca (quantitatively, and probably also qualitatively, deficient in protein) developed after 4 months a syndrome analogous to Kwashiorkor in human babies: retardation of growth and weight, lengthening of the skull, irritability, brittleness of the hair, inappetence. Lesions found P.M. were fatty degeneration, enlargement and generalized fibrosis of the liver, and fibrosis and atrophy of the pancreas. The disease was less marked in piglets from well nourished sows. In further studies in piglets on the same diet, the acute syndrome developed after 2 months, but not in litter mates given a milk supplement. Milk cured the condition, as in children. It is suggested that a factor, designated "L," present in normal milk, may be deficient in the milk of some mothers, and that the preclinical condition may be present before weaning.—F.E.W.

GROULADE, J. & GROULADE, P. (1956). Variations des protéines, glyco et lipoprotéines du sérum de chien normal selon l'âge. (Electrophorèse sur papier). [**Age variations in the serum proteins of the normal dog.**]—*C. R. Acad. Sci., Paris.* **243**, 611-612. **202**

Paper electrophoresis revealed that the total protein content and the amount of the protein fractions of serum increased with increasing age of the dog, except the  $\alpha_1$  globulins.—R.M.

BARLOW, R. M. (1956). **An ataxic condition of lambs clinically simulating swayback.**—*Vet. Rec.* **68**, 712-713. [Abst. from author's summary.] **203**

A preliminary note on a condition of lambs on improved hill pastures in the east of Scotland. Whilst the clinical symptoms closely resembled those of swayback, the lesions were markedly different. The disease appears to be not uncommon.

MILLS, C. F. & MURRAY, G. (1956). **Avidity of the water-soluble components of herbage for added cupric ions.**—*Nature, Lond.* **177**, 793-794. **204**

It was possible to demonstrate the formation of stable organic copper compounds when

Cu<sup>64</sup> ions were added to the water soluble components of herbage. A description of the technique is given.—J. A. NICHOLSON.

COMMON, R. H., McCULLY, K. A., STEPLER, H. A. & MAW, W. A. (1956). **Observations on the mineral metabolism of pullets. XI. The effects of protracted treatment with estrogen and with estrogen plus androgen on retention of calcium by the sexually immature pullet.**—*Canad. J. agric. Sci.* **36**, 166-173. **205**

It had previously been shown by Common *et al.* (1948) that treatment of sexually immature pullets with androgen or oestrogen alone did not affect the average daily retention of Ca, but that concurrent administration of the hormones resulted in marked increase in Ca retention. In these experiments daily values for Ca retention were compared in sexually immature pullets untreated or treated with 0.5 mg. oestradiol benzoate (ODB) daily or with 0.5 mg. ODB plus 0.4 mg. testosterone propionate (TST). In comparison with the controls, ODB plus TST increased the daily Ca retention up to a maximum 7 to 9 days from the start of treatment, after which the values returned to normal. ODB alone caused no change for 3 to 4 days, after which a decline took place with a minimum about the 10th day and a gradual return to normal by the 28th day.—A. S. GREIG.

KÖHLER, H. (1956). Knochenmark und Blutbild des Ferkels. II. Das Ferkel mit spontaner Anämie. [**Bone marrow and blood picture of the piglet. II. The piglet with spontaneous anaemia.**]—*Zbl. VetMed.* **3**, 460-511. [English, French and Spanish summaries. English summary modified.] **206**

Piglet anaemia is a hypochromic anaemia. In films of blood and bone marrow there is evidence of inhibited maturation and cell division. Iron deficiency is at most of transient and subsidiary importance, the most important factor being a deficiency of animal protein. Electrophoretic studies show that various protein derivatives, probably amino-acids, are important at different ages in the prevention of anaemia. Cu, Mn and Co are of little significance. To what extent other deficiencies, particularly of vitamins (B<sub>12</sub>), are of importance in piglet anaemia is not yet certain.

BIRK-SØRENSEN, N. & CHRISTENSEN, N. O. (1956). Undersøgelser over parenteral jernterapi ved pattegriseanaemi. [**Parenteral iron therapy in piglet anaemia.**]—*Medlemsbl. danske Dyrlægeforen.* **39**, 326-334. [In Danish.] **207**

I/m iron therapy yielded good results in



preliminary field trials in winter in 62 piglets from 4 herds, half being severely affected clinically, and half, having access to iron from natural sources, less severely affected with anaemia. Two preparations were tested: "Imferon" (an isotonic soln. of a complex iron-dextran compound) and "Idozan 1%" (a colloidal complex ferric hyroxide-citric acid compound). A single treatment was given and haemoglobin values were estimated and body wt. recorded weekly for 4-7 weeks. Both compounds were well tolerated and each raised the Hb content of the blood well above that of controls (with access to iron), but "Imferon" yielded better results and gave better wt. gains. There was no pigmentation at the site of injection after 14-17 days.—F.E.W.

GODING, J. R. & DENTON, D. A. (1956). **Adrenal cortex and the parotid secretion of sodium-depleted sheep.**—*Science*. **123**, 986-987. 208

In sheep moderately depleted of sodium ions by means of a parotid fistula, administration of deoxycortone acetate produced an effect on the salivary electrolyte pattern. Following bilateral adrenalectomy, sheep could be maintained in good condition with a normal electrolyte pattern of parotid saliva by the daily administration of deoxycortone acetate and cortisone.—J. A. NICHOLSON.

FOURMAN, P., McCANCE, R. A. & PARKER, R. A. (1956). **Chronic renal disease in rats following a temporary deficiency of potassium.**—*Brit. J. exp. Path.* **37**, 40-43. [Abst. from survey of paper (p. i.).] 209

Progressive renal damage with tubular dilatation, glomerular atrophy and high blood urea up to 7 months after temporary potassium deficiency occurred in rats fed on a potassium-deficient diet for 6-8 weeks followed by stock diet.

PLUMLEE, M. P., THRASHER, D. M., BEESON, W. M., ANDREWS, F. N. & PARKER, H. E. (1956). **The effects of a manganese deficiency upon the growth, development, and reproduction of swine.**—*J. Anim. Sci.* **15**, 352-367. 210

Gilts given 0.5 p.p.m. of Mn in the ration from weaning onwards had poor skeletal growth, obesity, low fertility and poor udder development. Gilts given 1 p.p.m. in the ration from weaning had no deficiency symptoms but the Mn content of the soft tissues of them and of their young was reduced by 50%. —M.G.G.

SWENSON, M. J., UNDERBERG, G. K. L. & GOETSCH, D. D. (1956). **Effects of dietary trace minerals, excess calcium, and various roughages on weight gains of Hereford heifers.**—*Amer. J. vet. Res.* **17**, 207-212. 211

Trace elements had little effect on the growth of calves but improved the general appearance of animals fed poor quality hay. Excess Ca lowered the growth rate. Lucerne hay did not stimulate growth but improved the general appearance of the animals.—M.G.G.

DAVIS, C. L., ELLIOTT, R. F. & LASSITER, C. A. (1956). **The effect of lecithin, choline, and methionine on the vitamin A and carotene plasma levels and liver stores of young dairy cattle.**—*J. Dairy Sci.* **39**, 440-447. [Authors' summary modified.] 212

Fifty-four 2-day-old male Jersey calves were used to study the effect of three lipotropic agents, DL-methionine, choline chloride, and vegetable lecithin, on the absorption and utilization of vitamin A and carotene. The feeding of these three agents plus vitamin A did not materially increase the plasma levels or liver stores of vitamin A above those of controls receiving vitamin A alone. The addition of either choline or methionine plus carotene to the ration caused a significant increase in the absorption of carotene as measured by the plasma content—significantly higher in all treated groups. None of the lipotropic agents had any significant effect on the liver stores of carotene when carotene was fed, but the feeding of carotene *per se* increased liver stores of carotene but not of vitamin A, although blood plasma values of vitamin A were increased. None of the supplements appeared to have any appreciable effect on the percentage of ether extract or total solids in the liver and kidneys.

The absence of consistent results due to the addition of either methionine, choline, or lecithin to the supplementary vitamin A would indicate that they have little value in increasing the absorption or utilization of vitamin A in the young dairy calf. The results might have been more convincing if less of vitamin A or of its precursor had been fed.

HARRIS, P. L., KUJAWSKI, W. F. & LUDWIG, M. I. (Compiled by.) (1954). **Annotated bibliography of vitamin E in chicken nutrition 1929 to 1954.**—pp. 54. Rochester, N Y. Eastman Kodak Co. 213

A collection of 106 quite detailed abstracts, with a subject index.—R.M.

DAY, P. L. & DINNING, J. S. (1956). **Nutritional muscular dystrophy in monkeys receiving a diet deficient in both vitamins B<sub>6</sub> and E.** — *Nutr. Symposium Ser. No. 12*, pp. 78-81. Discussion: pp. 81-82. [Authors' summary modified.] 214

Young rhesus monkeys, after about 10 months on a diet deficient in vitamins E and B<sub>6</sub>, developed progressive muscular weakness, increase in urinary output of creatine and allantoin, but a reduction in urinary creatinine, progressive anaemia, and leucocytosis. All these physical, chemical, and cytological changes responded to the administration of  $\alpha$ -tocopherol. It is not yet known what part the deficiency of vitamin B<sub>6</sub> may have in the development of the syndrome.

VICTOR, M. & ADAMS, R. D. (1956). **The neuropathology of experimental vitamin B<sub>6</sub> deficiency in monkeys.** — *Nutr. Symposium Ser. No. 12*, pp. 38-45. [Authors' summary modified.] 215

Neuropathological changes in monkeys deprived of pyridoxine are described. The most prominent abnormalities were in the large cells of the cerebral cortex, which showed swelling, excentricity of nuclei, and loss of the Nissl particles. This cell change closely resembles that seen in human pellagra. This is a preliminary account of work on a small number of animals. The significance of the nerve cell change itself and the specificity of this change in pyridoxine deficiency are still in doubt.

LEHR, D. & MARTIN, C. R. (1956). **Prevention of severe cardiovascular and smooth muscle necrosis in the rat by thyro-parathyroidectomy.** — *Endocrinology*, 59, 273-288. [Authors' summary modified.] 216

In white rats, the development of severe muscular necrosis and calcification in the arterial tree, the heart and the gut following standard renal injury, can be completely prevented by prior thyro-parathyroidectomy. It is suggested that the main cause of the muscular injury in intact rats is renogenic parathyroid hypertrophy resulting in autointoxication with parathyroid hormone. The thyroid hormone is believed to contribute to the development of typical lesions by general elevation of metabolic function or by a more specific stimulative effect upon other endocrine glands.

MCCLYMONT, G. L. & SETCHELL, B. P. (1956). **Ovine pregnancy toxæmia. IV. Insulin induced hypoglycaemic encephalopathy in**

**the sheep and its implications as regards pathogenesis of the disease.**—*Aust. vet. J.* 32, 97-109. 217

Symptoms identical with those of pregnancy toxæmia were produced in sheep by s/c administration of insulin (5 or 10 units per kg.). Symptoms appeared when a mean minimum blood glucose level of 12 mg.% was reached. Lethal encephalopathy followed minimal mean hypoglycaemias of 6.8 mg.% after blood glucose levels below 20 mg.% had operated for a mean of 43 hours. Sheep were relatively more resistant to i/v administration of insulin. A detailed comparison is made of many features of pregnancy toxæmia and insulin-induced hypoglycaemic encephalopathy, and the pathogenesis of pregnancy toxæmia is discussed.

—D. C. BLOOD.

ENDER, F., DISHINGTON, I. W. & HELGEBOSTAD, A. (1956). **Parturient paresis and related forms of hypocalcemic disorders induced experimentally in dairy cows.** — *Nord. VetMed.* 8, 507-513. [In English.] 218

Typical symptoms of milk fever were produced experimentally in cows by feeding a diet rich in Ca for 1-6 months before calving. It is suggested that the hypercalcaemia so produced leads to atrophy of the parathyroid glands, so that sufficient hormone to meet the demands of lactation is not produced at parturition. High protein feeding during the dry period may also be a factor in the aetiology of milk fever, since this stimulates the mammary glands to increase milk secretion and also increases absorption of Ca from the intestine, thus leading to a hypercalcaemic state with atrophy of the parathyroids.—J. A. NICHOLSON.

HALSE, K. & VELLE, W. (1956). **Om fargeintensiteten av Rotheras reaksjon på acetone i urin hos kyr ved varierende konsentrasjon av total acetonelegemer i blod. [On the colour intensity of Rothera's reaction for acetone in the urine of cows with varying concentration of total acetone bodies in blood.]** — *Nord. VetMed.* 8, 397-416. [In Norwegian. English and German summaries.] 219

By comparing the intensity of the colour reaction of the urine to the nitroprusside test with a colour standard (potassium permanganate solution), and estimating the blood sugar and the concentration of total acetone bodies in the blood, three positive categories of urine reaction were differentiated. With a weakly positive urine reaction (colour lighter than a fresh soln. of 21 mg. KMnO<sub>4</sub> in 100 ml. water)



a clinical diagnosis of acetoanaemia could be excluded. With a moderately positive reaction the blood values might be high enough to justify a diagnosis of mild acetoanaemia. With a highly positive reaction (when after dilution of the specimen 1:16 with water the colour remains more intense than the standard) the changes in values for both blood sugar and total acetone bodies were unequivocal. The highly positive reaction is so intense as to give an appearance of opacity.—F.E.W.

See also absts. 324 (report, Milk Marketing Board); 330 (book, animal nutrition).

## DISEASES, GENERAL

WARDLE, R. N. (1956). **An Australian outlook on world animal health problems.**—*Rep. 31st Meet. Aust. N.Z. Ass. Adv. Sci.*, 1955, 141-146. **221**

An outline is given of the introduction of exotic diseases to Australia. The numerous major epizootic diseases not found in that country are listed, and their prevalence in countries from which stock might be imported is described. The present restrictive policy on importation of animals may keep Australia free from these diseases, although it is possible that some may be introduced by immigrants. The organization of international and Australian bodies concerned with disease control and quarantine is outlined.—R. I. SOMMERVILLE.

GROOTENHUIS, G. (1956). De perinatale letaliteit bij het paard. [**Prenatal and neonatal death of foals.**]—*Tijdschr. Diergeneesk.* **81**, 341-412. [In Dutch. English, French and German summaries.] **222**

G. presented case-histories and P.M. findings on 105 foals which were stillborn or died within a few days after birth. They were all of heavy draught breeds. He was unable to determine the cause of these losses: there appeared to be a common aetiology. The weight of the placenta was often abnormally high in relation to the weight of the foetus. Bacteriological and serological examination did not reveal specific pathogens. The commonest P.M. findings were haemorrhages, excess fluid in the body cavities, and sometimes oedema. The calcium and phosphorus contents of bones were low compared with bones of normal foals. The majority of mares had lost their foals from one or more previous pregnancies, although some had also had normal foals.—R.M.

DE GRUCHY, P. H. (1956). **Morbidity and mortality in a turkey flock.**—*Vet. Rec.* **68**, 671-675. [Author's summary modified.] **223**

PENNINGTON, R. J. & SUTHERLAND, T. M. (1956). **Ketone-body production from various substrates by sheep-rumen epithelium.**—*Biochem. J.* **63**, 353-361. **220**

In *in vitro* studies, rumen epithelium from sheep metabolized pyruvate and lactate with the formation of ketone bodies. The presence of glucose lowered endogenous ketone formation and had a marked anti-ketogenic action, but malonate increased ketone formation from pyruvate and glucose.—J. A. NICHOLSON.

An attempt was made to investigate and record the causes of morbidity and mortality in a flock of 3,000 turkeys throughout one complete rearing season. The total number of deaths was 504 (16.3%) of which 420 (13.4%) were examined P.M. No definite cause of death could be established in 21% of those examined and 15 different causes, most of which were not preventable, were recognized in the remainder.

RAINEY, J. W. (1956). **Clinical observations on the bovine omasum.**—*Vet. Rec.* **68**, 642-644. **224**

Atony of the omasum in cattle is discussed. The condition, which is common in Tasmania where it is referred to as "dry bible," may be secondary to other diseases, such as parturient haemoglobinuria and milk fever; or it may occur as a separate clinical entity with no obvious cause. It usually terminates fatally in 48-72 hours and P.M. findings are a dry, distended and impacted omasum with necrosis of the mucosa, and peritonitis; abomasitis may also be present. Three case histories are recorded.—T.E.G.R.

PIERSON, R. E. & HILL, H. J. (1956). **Necrotic vulvitis in feedlot heifers.**—*J. Amer. vet. med. Ass.* **129**, 71-73. **225**

Necrotic vulvitis occurred among fattening heifers housed in straw yards along with pigs. Some of the heifers were pregnant and had been treated with oestrogen as abortifacient. The condition is attributed to laceration of the parts by pigs and subsequent bacterial infection. Recovery followed topical treatment and removal of the pigs.—T.E.G.R.

ANON. (1956). **Anovulvitis in heifers.**—*J. Amer. vet. med. Ass.* **129**, 73. **226**

Practically all of about 150 fattening heifers had lesions varying from small ulcers or exuberant granulations to ulceration of the

entire vulva and, in 2 cases, the lower part of the anus. The condition was possibly due to pig bites [see preceding abst.]. Penicillin or sulphonamide treatment was applied in a few cases. All the affected animals made an uneventful recovery.—T.E.G.R.

KING, J. O. L. (1956). **The numbers of fat globules in the milk of diseased cows.**—*Brit. vet. J.* **112**, 238-241. **227**

In 27 cows under treatment (mostly post-operative) it was observed that, although variations occurred in the percentage of fat, there were no corresponding changes in the number of fat globules per unit volume of milk.

—T.E.G.R.

KUDRYAVTSEV, B. D. (1956). [A disease of sheep in Kazakhstan, caused by penetration of the skin by awns of feather grass (*Stipa* spp.)]—*Veterinariya, Moscow*. **33**, No. 8, p. 32. [In Russian.] **228**

Awns of feather grass penetrated the skin and muscles of lambs, but seldom penetrated the skin of adult sheep or goats. They caused reddish inflammatory lesions, the size of a millet grain or lentil, in muscle, and abscesses sometimes formed. Secondary infection, leading to septicaemia and death, was common. In one lamb which died 18 awns were found in an area of 5 × 5 cm. of subcutaneous tissue.

—R.M.

VULPÉ, M., USHER, D. & LEBLOND, C. P. (1956). **Influence of the extirpation of male accessories on the occurrence of a "soft calculus" in the urinary bladder of the rat.**—*Endocrinology*. **59**, 257-259. [Authors' summary modified.] **229**

A single "soft calculus" is often present in the urinary bladder of male but not of female rats. However, no calculus is found after the extirpation of coagulating glands and seminal vesicles. When the seminal vesicles alone are extirpated, a calculus may be found but it is much smaller than in intact animals. It is concluded that the secretion of the seminal vesicles is conducive, and that of the coagulating glands essential, for the formation of the soft calculus.

NEWBERNE, P. M., MUHRER, M. E., CRAGHEAD, R. & O'DELL, B. L. (1956). **An abnormality of the proventriculus of the chick.**—*J. Amer. vet. med. Ass.* **128**, 553-555. **230**

Marked distension of the proventriculus and the gizzard was observed P.M. in experimental birds. There was no obstruction or stenosis in

the gizzard or any other part of the digestive tract. The cause of the condition is obscure.

—T.E.G.R.

AUSTIN, M. K., MILLER, M. & QUASTLER, H. (1956). **Five- to eight-day radiation death in mice.**—*Radiation Res.* **5**, 303-307. [Authors' summary modified.] **231**

A high incidence of deaths sometimes (but not always) occurs 5 to 8 days after X-irradiation. It is concluded that these deaths are expressions of a mode of acute radiation death which is different from marrow death and intestinal death.

PATTLE, R. E. (1956). **A test of silicone anti-foam treatment of lung oedema in rabbits.**—*J. Path. Bact.* **72**, 203-209. [Abst. from author's summary.] **232**

Silicone anti-foam aerosols had no effect on lung oedema produced in anaesthetized rabbits by i/v injection of adrenaline or exposure to phosgene.

STAEMMLER, M. (1956). **Die akuten Nephrosen. I. Die Sublimatnephrose. [Experimental study on acute nephroses. I. Caused by mercuric chloride.]**—*Virchows Arch.* **328**, 1-17. **233**

STAEMMLER, M. & KARHOFF, B. (1956). **Die akuten Nephrosen. II. Nierenschädigung durch Antibiotica. [Experimental study on acute nephroses. II. Renal damage by antibiotics.]**—*Ibid.* 481-502. **234**

I. I/p inj. in rats of 0.3 mg./100 g. body wt. of a one per thousand soln. of mercuric chloride produced grave necrotizing nephrosis with a tendency to calcify. The glomeruli, however, remained quite unchanged. The chemical was resorbed and stored in the renal epithelium, causing coagulation necrosis in the cells. Artificial enrichment of the blood with NaCl had no effect on necrosis. Ligation of one ureter prevented the condition in the kidney concerned.

II. Necrosis of the cortical tubules in rats caused by repeated inj. of massive doses of neomycin and viomycin was studied. Calcification was less marked than that caused by mercuric chloride. There was no uraemia. The epithelium of the damaged renal tubules had a marked regenerative tendency.—E.G.

HOLCOMBE, R. B. (1956). **The excretion of reducing corticoid substances in the urine of cows.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 86-87. [French summary.] **235**



It is considered that reducing corticoid substances in the urine of cows form a suitable basis for the routine assessment of adrenal cortical function. Increased function was

observed immediately after parturition and in cases of retained placenta; milk fever and primary acetonaemia apparently reduced activity.—T.E.G.R.

## POISONS AND POISONING

STEWART, W. LYLE & ALLCROFT, R. (1956).

**Lameness and poor thriving in lambs on farms in old lead mining areas in the Pennines. I. Field investigations.**—*Vet. Rec.* **68**, 723-728. [Abst. from authors' summary.] **236**

The disorder, in young Swaledale lambs, is characterized by a specific locomotor disability and is confined to flocks grazing near old lead mines. The history and symptoms are described. Lead values for blood, tissues and faeces of affected lambs were abnormally high, as were those of herbage samples from affected areas, although symptoms typical of acute lead poisoning were never observed and most affected lambs recovered spontaneously; moreover breeding ewes on affected farms remained clinically healthy. Blood lead concentrations of ewes and their new-born lambs were similar, but within 3-5 weeks those of the lambs were double those of the ewes. Clin. symptoms, however, were not always associated with high blood lead levels. Growth and development were much poorer in lambs from an affected area than in lambs from a healthy farm. Although these results suggest that absorption of abnormal amounts of lead is associated with the occurrence of the disorder, other possible factors cannot be ruled out.

VAN REEN, R. & WILLIAMS, M. A. (1956).

**Studies on the influence of sulfur compounds on molybdenum toxicity in rats.**—*Arch. Biochem.* **63**, 1-8. **237**

Administration of toxic doses of sodium molybdenate to rats caused an increase in the alkaline phosphatase activity of the liver. The addition to the diet of compounds containing sulphur (methionine, cystine, sodium thiosulphate or sodium sulphate) overcame this increase in phosphatase activity, and growth of the rats was better than that of those receiving molybdenum but not sulphur compounds. The action of the sulphur compounds may be to reduce the absorption of molybdenum from the intestine. [See also *V.B.* **23**, 2886.]—R.M.

LIÉGEOIS, F. & DERIVAUX, J. (1956). Quelques cas de fluorose chronique chez des moutons.

**[Chronic fluorosis in sheep.]**—*Ann. Méd. vét.* **100**, 221-244. **238**

The clinical symptoms and P.M. findings

associated with chronic fluorine poisoning in 5 sheep are described. The main changes were in the bones and teeth. In the latter there was irregular wear on the molars giving the tables a wavy appearance; there was loss of enamel on the anterior surface of the incisors which became dull and chalky. Significant changes were observed in the fluorine content of the urine, bones and teeth. A lamb born to a ewe which had been away from the contaminated area since mating had an abnormal fluorine content in the bones and teeth. This is taken as an indication that poisoning may occur through the placenta or the milk.—T.E.G.R.

PATTLE, R. E., BURGESS, F. & CULLUMBINE, H.

(1956). **The effects of a cold environment and of ammonia on the toxicity of sulphuric acid mist to guinea-pigs.**—*J. Path. Bact.* **72**, 219-232. [Authors' summary modified.] **239**

It is concluded that "smog" could be rendered harmless by the addition of ammonia to neutralize the sulphuric acid in it—if this is the major toxic constituent of "smog." In experiments on the toxicity of acid mists for animals litter should be removed in order to avoid the generation of ammonia in sufficient quantities to neutralize the acid. Pathological changes are slight if dyspnoea does not result from exposure (even if this is greater than LD<sub>50</sub>). Marked distension and emphysema of the lungs are seen in animals dying after a short exposure—death apparently being due to asphyxia from bronchial and laryngeal spasm. In animals which die after long exposure, capillary engorgement and haemorrhage are also seen—possibly resulting from the combined effects of anoxia and negative intrathoracic pressure. Repair in survivors is very slow. The mist has little effect on the nasal mucosa or on the trachea; in some animals it causes scattered discrete haemorrhages in the stomach walls.

I. STORMORKEN, N., DYBING, O. & FLATLA, J. L. (1955). Toksikologiske undersøkelser over natriumnitrit. **[Toxicological investigations on sodium nitrite.]**—*Fiskeridir. Skr. Teknol.* **3**, No. 4. 10-16. [In Norwegian. English summary: pp. 92-96.] **240**

II. ULVESLI, O. (1955). Undersøkelser over føring med sildemel av nitritkonservert sild til

- melkekyr. [Feeding fish meal made from herrings preserved with nitrite to dairy cows.] —*Ibid.* 17-38. [In Norwegian. English summary: pp. 92-96.] 241
- III. FLATLA, J. L. (1955). Praktiske fôringsforsøk med sildemel av nitritkonservert sild til storfe. [Practical cattle feeding trials with fish meal made from herrings preserved with nitrite.] —*Ibid.* 39-40. [In Norwegian. English summary: pp. 92-96.] 242
- IV. NAERLAND, G. (1955). Forsøk med sildemel av nitritkonservert sild til sau vinteren 1952/53. [Feeding sheep with fish meal made from herrings preserved with nitrite.] —*Ibid.* 41-46. [In Norwegian. English summary: pp. 92-96.] 243
- V. HVIDSTEN, H. & HUSBY, M. (1955). Forsøk med sildemel av nitritkonservert sild til griser. [Feeding pigs with fish meal made from herrings preserved with nitrite.] —*Ibid.* 47-64. [In Norwegian. English summary pp. 92-96.] 244
- VI. NJAA, L. R., UTNE, F., BRAEKKAN, O. R., MINSAAS, J., LAKSEVELA, B. & SAND, G. (1955). Forsøk med natriumnitrit og sildemel av sild konservert med natriumnitrit til kyllinger. [Feeding fowls with fish meal made from herrings preserved with nitrite.] —*Ibid.* 65-86. [In Norwegian. English summary: pp. 92-96. Abst. from English summaries.] 245
- I—VI. The maximum amount of nitrite at present permitted in meals made from herrings preserved with nitrite is 200 p.p.m. Experiments and feeding trials were carried out to ensure that it was safe to feed such meal to livestock. In general it was found that meal containing as much as ten times the permitted concentration could be fed over a period of 3-4 months without harmful effects.
- Nitrite poisoning was experimentally set up in cattle and sheep by a dose of 60 mg./kg. body wt., administered by mouth dissolved in water, and in pigs by 40-50 mg/kg. The lethal doses were 90-100 mg./kg. and 70-75 mg./kg. respectively. It was slightly less toxic when administered mixed with dough than when dissolved in water.—R.M.
- HVIDSTEN, H. (1955). Studies on the effect of nitrite in pig feed.—*Acta agric. Scand.* 5, 245-256. [In English.] [Reprint No. 150 of the Royal Agricultural College of Norway, Division of Animal Nutrition.] 246
- An account in English of part of the work reported in preceding abst.—R.M.
- GRUNDY, H. F. & HOWARTH, F. (1956). Pharmacological studies on hemlock water dropwort.—*Brit. J. Pharmacol.* 11, 225-230. [Authors' summary copied *verbatim*.] 247
- Crystalline oenanthotoxin and tinctures of *Oenanthe crocata* tubers have similar pharmacological properties. Oenanthotoxin convulsions in rabbits and mice resemble those of picrotoxin; in rabbits and cats they have their origin in the brain stem. Intravenous oenanthotoxin causes a transient fall followed by a sustained rise in blood pressure. The former is due to a direct action on the myocardium. In mice, oenanthotoxin is six times as toxic as picrotoxin, and is more potent as an antidote for pentobarbitone poisoning. In the rabbit, it is a more powerful stimulant of respiration than picrotoxin. Rabbits and cats given a lethal dose of oenanthotoxin can be saved by the early administration of pentobarbitones.
- MACDONALD, J. (1956). *Macrocarpa* poisoning. —*N.Z. vet. J.* 4, 30. 248
- Macrocarpa poisoning is suspected in 9 pregnant cows of having been the cause of a syndrome characterized by abortion 2-4 weeks before term, retained placenta with enlarged cotyledons, straining, weakness, subnormal temp. and, in two cases, death. All had fed on leaves of *Cupressus macrocarpa*. The survivors were given antihistamine treatment, with promethazine hydrochloride, for metritis and an uneventful recovery followed. —T.E.G.R.
- GUSUININ, I. A. (Edited by:) (1956). [Questions of plant poisoning.]—*Veterinariya, Moscow*. 33, No. 6. pp. 77-79; No. 8. pp. 81-82. [In Russian.] 249
- G. presented brief abstracts of 25 original contributions by different authors on plant poisoning. Some of them are case reports:—poisoning by jute (*Corchorus capsularis*); poisoning of sheep by unripe millet and by *Lotus corniculatus*; of cattle by buckwheat and by potato haulms or potato haulm silage; of pigs by *Arum maculatum*. S. G. Yudin reported on the toxicity of *Trichodesma incanum* for pigs and horses, and its possible role in the aetiology of "suiiyuk" disease of horses (bronchopneumonia). Rodin & Eliseev mentioned the treatment of severe *Equisetum* poisoning in horses by the i/v inj. of 50 ml. of a 30% soln. of sodium thiosulphate. N. T. Plishko found thiopentone narcosis effective in the treatment of experimental *Cicuta virosa* poisoning in rabbits. According to Nichno Ivanov (Bul-



garia), extracts of some plants from regions where chronic bovine haematuria was endemic, slowed the blood clotting time and produced changes in capillaries.—R.M.

CHANDLER, R. L. (1956). An occurrence of toxicity associated with phenothiazine in West African cattle.—*Brit. vet. J.* **112**, 387-388. 250

A herd of 18 cattle received 35-50 g. of phenothiazine per animal according to weight, and a second similar treatment 3 months later. Four to five days after the second treatment 9 animals exhibited conjunctivitis, keratitis, weakness, inappetence and, in one case, photophobia. P.M. lesions in the 8 animals that died were hepatic congestion and hepatitis, nephritis and ecchymoses of the epicardium. It is sug-

gested that the consumption of lush herbage was connected with the toxicity.—M.G.G.

HEWITT, H. B. (1956). Renal necrosis in mice after accidental exposure to chloroform.—*Brit. J. exp. Path.* **37**, 32-39. [Survey of paper (p.i) modified.] 251

An outbreak of renal tubular necrosis affecting adult male mice of the CBA strain, but not females or weanlings of the same strain, nor albinos of both sexes, was attributed to accidental exposure to chloroform vapour because similar lesions were produced in male mice by experimental exposure to low concentrations of chloroform. It is pointed out that mice surviving unrecognized exposure to this hazard would be unsuitable for any studies in which renal function could play a part.

See also absts. 233-234 (nephroses); 326 (report, Basutoland).

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

ARCHER, R. K. (1956). The eosinophilic response in the horse to intramedullary and intradermal injections of histamine, ACTH, and cortisone.—*J. Path. Bact.* **72**, 87-94. [Author's summary modified.] 252

Intramedullary and intradermal injections of histamine acid phosphates in doses sufficient to cause peripheral eosinopenia produced, within an hour, a local eosinophilia which lasted about 4 hours. Neither adrenocorticotrophic hormone nor cortisone produced this result.

POPOVA-BATUEVA, L. V. (1956). [Observations on the therapeutic use of the radioactive mineral sard (carnelian) in veterinary medicine.]—*Veterinariya, Moscow.* **33**, No. 6, pp. 49-55. [In Russian.] 253

The radioactive mineral sard was placed in a tube through which warm air was driven by an electric fan. The tube was placed against the skin in the region to be treated, for 20 sec. daily. This was said to delay the development of osteomyelitis and to hasten regeneration of the severed sciatic nerve of rabbits; it increased the time of blood clotting by 10-20 sec.—R.M.

NICHOLS, R. L., JONES, W. F., JR. & FINLAND, M. (1956). Sulfamethoxypyridazine: preliminary observations on absorption and excretion of a new, long-acting anti-bacterial

sulfonamide.—*Proc. Soc. exp. Biol., N.Y.* **92**, 637-640. [Authors' summary modified.] 254

Concentrations of suphamethoxypyridazine (3-sulphonamide-6-methoxypyridazine) in blood and urine of 6 normal men were determined after a single oral dose of 4 g. The drug was well absorbed, yielding high levels of free drug and only small amounts in acetylated form in the plasma. Little if any of the drug diffused into the blood cells. The drug was cleared slowly from the plasma, the acetylated form being cleared by the kidney about 11 times as fast as the free drug. Urine concentrations varied up to about 200 mg.%, between 35 and 60% being in the conjugated form. Significant amounts were still present in the blood and urine 105 hours after dosage.

BROCK, T. D. (1956). Studies on the mode of action of novobiocin.—*J. Bact.* **72**, 320-323. [Author's summary modified.] 255

MgSO<sub>4</sub> reversed the activity of novobiocin (a coumarin derivative) against Gram-negative but not against Gram-positive organisms. Novobiocin caused filamentation in Gram-negative but not in Gram-positive bacteria. There was no evidence that the antibiotic affects ribonucleic acid synthesis even in filamentous cells. Deoxyribonucleic acid synthesis was decreased.

See also absts. 3 (PA775); 11 (formaldehyde disinfection in TB.); 12 (PAS); 39 (furazolidone); 43 (effect of some antibiotic combinations on salmonella); 83-84 (trypanocidal drugs); 89 (enterohepatitis); 92-93 (coccidiosis); 102 (toxoplasmosis); 148 (an antibiotic against viruses); 170, 176 & 178 (anthelmintics); 186 (nitrogen mustard in canine lymphoma).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

WOODS, R. & CARLSON, L. D. (1956). **Thyroxine secretion in rats exposed to cold.** — *Endocrinology*, **59**, 323-330. [Authors' summary modified.] **256**

Thyroxine secretion in rats exposed to cold for various periods was estimated by determining: (a) the amount of d,l-thyroxine required daily by the exposed rats to prevent thyroid hypertrophy after treatment with propylthiouracil (an estimate of the thyroxine needed to restore the hypophyseal-thyroid system to its normal equilibrium), and (b) the daily dose of l-thyroxine which restores oxygen consumption of thyroidectomized rats to normal (a measure of the over-all peripheral action of that hormone). The results confirmed previous evidence that thyroxine secretion is greatly increased after 2 weeks at a low environmental temp. Thyroid activity remained at a high level throughout 60 days of exposure to cold.

WALTER, P. (1956). Sinneshaare im Bereich der Pferdellippe. [**Tactile hairs on the lips of the horse.**] — *Zbl. VetMed.* **3**, 599-604. [English, French and Spanish summaries. English summary modified.] **257**

Two different types of tactile hairs are described: sinus hairs, characterized by a network of sensory fibres enclosed within the superficial cell layers of the outer root epithelium and surrounding the hair; sensory hairs, without a sinus, having fibres arranged in two layers, at right angles to one another and not forming a network; the internal fibres are arranged longitudinally and are enclosed in the external epithelial layer of the root; they envelop the hair and terminate beneath the orifice of the sebaceous glands as a brush-like structure; the external fibres form a circular spiral and have no special terminal formations. There are a few fibrils connecting the two systems.

HARDY, M. H. & LYNE, A. G. (1956). **The pre-natal development of wool follicles in Merino sheep.** — *Aust. J. biol. Sci.* **9**, 423-441. [Abst. from authors' summary.] **258**

A histological study was made of wool follicles in skin from the trunk of 24 sheep foetuses from 69 to 145 days of gestation. Extensive use was made of serial sections parallel to the axis of the wool follicles as well as those parallel to the skin surface. Skin from Merino lambs and adults was also examined.

A series of stages in the development of hair follicles in mammals is defined. The special features of each stage in the development of

primary and secondary wool follicles in the Merino are indicated. Secondary follicle development, not fully described hitherto for any breed of sheep, shows some distinctive features, the most important of which is the origin of later follicles, by branching from earlier ones. Some preliminary information was obtained about their development and structure in late pre-natal and early post-natal life. Carter's [*V.B.* **16**, 2089] proposed series of stages of wool follicle group development, are re-defined in the light of these observations; a table shows the stage of development of each type of follicle.

PADAWER, J. & GORDON, A. S. (1956). **Cellular elements in the peritoneal fluid of some mammals.** — *Anat. Rec.* **124**, 209-222. [Authors' summary modified.] **259**

The cellular elements in the peritoneal fluid of lab. animals examined included eosinophilic leucocytes, mononuclears (macrophagic and lymphocytic elements) and mast cells. There were wide variations in cell numbers and types among the various species tested as well as between strains of a given species. Eosinorhexis occurred in all animals in the peritoneal fluid of which eosinophiles were present. It is considered that under normal conditions a constant number of cells is present within the abdominal cavity.

BORN, G. V. R., DAWES, G. S., MOTT, J. C. & RENNICK, B. R. (1956). **The constriction of the ductus arteriosus caused by oxygen and by asphyxia in newborn lambs.** — *J. Physiol.* **132**, 304-342. **260**

A detailed study of the mechanism of closure of the ductus arteriosus in new-born lambs showed that raising the arterial O<sub>2</sub> saturation was followed by its closure. O<sub>2</sub> acts directly on the smooth muscle of the ductus arteriosus which responds slowly, taking 5 to 10 min. to become constricted. Constriction of the ductus arteriosus still occurred even when there was under-ventilation at the time of birth, probably as the result of the release of sympathetic amines following asphyxia since the infusion of adrenaline and noradrenaline into foetal lambs also caused constriction of the ductus arteriosus.

— J. A. NICHOLSON.

SMITTEN, N. A. (1956). [**Pericellular structure of neurones of the spinal cord of black and albino Karakul lambs.**] — *C. R. Acad. Sci. U.R.S.S.* **106**, 551-553. [In Russian.] **261**  
Weakness, incoordination and death occurred in albino Karakul lambs. Examina-



tion of stained sections of spinal cord revealed that this was due to deformation and degeneration of synapses.—R.M.

JUBB, K. V. (1956). **Observations on the bovine pituitary gland.**—*Thesis, Cornell*. pp. 60. 262

This is a study of 350 selected bovine pituitary glands using the periodic acid-leucofuchsin staining technique. Aldehyde-fuchsin and, to a lesser extent, modifications of Mallory's connective tissue stain have been applied to duplicate sections for comparative purposes.

—H. L. GILMAN.

CLEGG, R. E., ERICSON, A. T., HEIN, R. E., MCFARLAND, R. H. & LEONARD, G. W. (1956). **An electrophoretic component responsible for calcium binding in the blood sera of chickens.**—*J. biol. Chem.* **219**, 447-454. 263

Electrophoretic and radiochemical studies showed that divalent calcium ions only reduced slightly the mobility of the electrophoretic components of normal cockerel sera, whereas their presence drastically reduced the mobility of the leading component in the sera of diethylstilboestrol-treated cockerels. The extra calcium binding capacity of such cockerel sera and sera from laying hens appears to be due to the presence of a lipoprotein.—J. A. NICHOLSON.

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

PIGOURY, L. & CHABASSOL, C. (1956). Diagnose spécifique quantitative et qualitative, par floculation, des viandes et abats contenus dans une préparation de charcuterie crue ou cuite. [**Quantitative and qualitative diagnosis of the species of meat in cooked or raw meat products by means of precipitation.**]—*Rec. Méd. vét.* **132**, 357-385. 264

Specific immune serum for each kind of meat is prepared in rabbits by repeated parenteral injection of a filtrate of the meat extract. After maceration in normal saline the product under investigation is suitably diluted and 0.2 ml. immune serum is then added to each dilution. Precipitation is then read off against a corresponding series of dilutions used as controls. This method is used for the quantitative and qualitative analysis of raw meat products and, with certain modifications, it can also be used for cooked products.—T.E.G.R.

EHRlich, C. & MEMPEL, S. (1956). Über die Entwicklung der Tiergesundheitsdienste insbesondere in Nordrhein-Westfalen. [**Development of the veterinary health service, particularly in North Rhine-Westphalia.**]—*Berl. Münch. tierärztl. Wschr.* **69**, 261-265. 265

The history is given of the veterinary health service in North Rhine-Westphalia from its inauguration in 1908. The current campaigns for the control of bovine TB., sterility, brucellosis, disorders of the udder and parasitic diseases are described, and a brief description of the work of the pig, sheep and fowl health services is given.—M.G.G.

KEY, A. (1956). **Pollution of surface water in Europe.**—*Bull. World Hlth Org.* **14**, 845-948. [Author's summary copied *verbatim*.] 266

This paper discusses pollution of surface water in 18 European countries. For each an account is given of its physical character, population, industries, and present condition of water supplies; the legal, administrative, and technical means of controlling pollution are then described, and an outline is given of current research on the difficulties peculiar to each country. A general discussion of various aspects common to the European problem of water pollution follows; standards of quality are suggested; some difficulties likely to arise in the near future are indicated, and international collaboration, primarily by the exchange of information, is recommended to check or forestall these trends.

See also absts. 125 (viability of swine fever virus in sausages); 127-128 (cat-scratch fever).

## LIVESTOCK HYGIENE

KENNY, A. W. (1956). **The safe disposal of radioactive wastes.**—*Bull. World Hlth Org.* **14**, 1007-1060. [Author's summary modified.] 267

A comprehensive review of the subject, with 100 references, comprising (1) a study of the basic facts of radioactivity and of nuclear

fission; the characteristics of radioisotopes; the effects of ionizing radiations; and maximum permissible levels of radioactivity for workers and for the general public; and (2) an account of the different types of radioactive waste—reactor wastes and wastes arising from the use of radioisotopes in hospitals and in industry; the appli-

cation of the maximum permissible levels of radioactivity to their disposal and treatment; and an account of the methods practised at the principal atomic energy establishments.

PAGOT, J., DERBAL, Z. & LAHORE, J. (1956).

Note sur les techniques pratiques de fabrication de l'ensilage en zone tropicale. [**Silage making in the Tropics.**]—*Rev. Elev.* 9, 167-173. [English and Spanish summaries.] 268

Good quality silage can be made in the French Sudan or French Guinea, either in pits or stacks, the former for large, the latter for small farms. Pit silage, using cultivated grasses mechanically harvested and chopped, with legumes either chopped or whole, and a

proprietary additive, "Sovilon" (a mixture of glycol iodoacetates), costs about £1 per ton; with formic acid it costs about £1 10s. a ton. If the soil is firm and well drained, cementing of the sides and bottom is unnecessary. Whichever additive is used the product is more palatable to cattle if it is sprayed with salt water before feeding. With the stack method, hand harvested bush grass is mixed with common salt, being stacked on to a base dug to a depth of 50-80 cm. This type of silage is very palatable to cattle and costs about £1 2s. per ton. Stacks and trenches can be opened 3-6 months after filling. Various wild and cultivated species of plants suitable for ensilage are described, with cultural details and information concerning yield.

—F.E.W.

## REPRODUCTION AND REPRODUCTIVE DISORDERS

ROBINSON, T. J. (1956). **Progress in the artificial insemination of the sheep.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III, pp. 9-12. [French summary. Author's summary modified.] 269

Two groups (2 and 3), each of 112 Merino ewes, received 10 mg. progesterone daily for 16 days. Group 3 also received 500 i.u. of pregnant mare serum on the 17th day. In group 2, 104 were teased within 4 days after the final injection, 74 of them on the 3rd day. Corresponding figures for group 3 were 107 and 96. Pregnant mare serum significantly improved the timing of the onset of oestrus. Ewes inseminated, lambled, and lambs born in groups 1 (controls), 2, 3 and overall were respectively: 104, 58, 74; 104, 53, 64; 107, 61, 85; 315, 172, 223. Semen volumes of 0.2, 0.1 or 0.5 ml. were equally effective. There were no significant differences in fertility between groups. Ewes in oestrus and inseminated 72 hours after the final injection were significantly more fertile than ewes inseminated a day later.

DAUZIER, L. (1956). Quelques résultats sur l'insémination artificielle des brebis et des chèvres en France. [**Artificial insemination of sheep and goats in France.**]—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III, pp. 12-14. [In French. English summary modified.] 270

The fertilizing power of ram spermatozoa was rapidly depressed at 2° to 4°C. both in pure semen and in semen diluted in sodium citrate-egg yolk or in a saline medium. Of the various diluents used, only skim milk heated at 95°C. for 10 min. preserved satisfactorily the fertilizing capacity of ram and goat spermatozoa. When

antibiotics and sulphonamides were added, the conception rate was higher (65% after 12 hours' storage). The survival rate of ram spermatozoa in a saline medium at -79°C. was poor, even with the addition of glycerol, pentose, lipoprotein or lecithin. Despite an excellent survival rate of ram spermatozoa in milk at -79°C., the conception rate was very low (5%).

POLGE, C. (1955). **Techniques for artificial insemination in pigs.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III, pp. 59-62. [French summary. Author's summary modified.] 271

Methods of artificial insemination in pigs are described. Experiments were made with semen diluted in an egg yolk-glycine medium. About 50% of the inseminated pigs became pregnant and produced normal litters when the semen was used on the day of collection. The pregnancy rate fell if less than  $2 \times 10^9$  spermatozoa were inseminated, and rose if antibiotics were included in the diluent. Insemination on the second day of oestrus with a large volume of diluted semen (100 ml. for gilts and 200 ml. for sows) is recommended. Diluted semen stored at 5°C. had good motility for 2-3 days, but the fertilizing capacity was much reduced after one day and was negligible after 2 days.

ROLLINSON, D. H. L. (1956). **The use of electroejaculation in the development of artificial insemination in African cattle.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III, pp. 44-47. [French summary. Abst. from author's summary.] 272

Artificial insemination of zebu cattle has



previously been limited by the sexual sluggishness of the bulls. Electro-ejaculation overcomes this difficulty and the results of this method in Uganda are described. A second advantage is that bulls susceptible to East Coast fever (theileriasis) do not run the risk of infection.

FRAPPELL, J. P. & WILLIAMS, G. (1956). A study of heterospermic insemination in cattle. — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 65-67. [French summary.] 273

The results of 2 experiments led to the conclusion that, under the normal conditions of A.I. routine, the mixing of semen from bulls of the same breed does not significantly increase the conception rate.—T.E.G.R.

HENDERSON, J. A., MACPHERSON, J. W. & SNYDER, R. G. (1956). The use of frozen semen in routine insemination of cattle. — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 15-18. [French summary. Authors' summary modified.] 274

Since December 1954, only frozen semen has been used by the Waterloo Cattle Breeders Association, Ontario. During 1955, 47,007 first inseminations were made with a 60-90 day non-return rate of 64.6%. In addition, a small centre in Western Canada has received frozen semen by air, inseminating 1,974 cows with a 60-90 day non-return rate of 68.2%. The technical procedures are outlined and an electrical apparatus for freezing and storing semen is described.

EMMENS, C. W. & MARTIN, I. (1956). The controlled introduction of deep-freeze techniques into artificial insemination. — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 18-21. [French summary. Authors' summary modified.] 275

Preliminary results in balanced tests with 1,014 cows showed no significant differences in the fertility of bull semen diluted to  $3 \times 10^7$  spermatozoa/ml. either stored chilled for up to 48 hours, or frozen to  $-79^\circ\text{C}$ . with or without equilibration with glycerol-arabinose diluent. Frozen semen had fewer live spermatozoa than the original ejaculates, and non-equilibrated semen had less than equilibrated semen. By 48 hours, however, the viability of chilled semen had often fallen to about the same levels as that of frozen semen. This is consistent with the finding that chilled semen did not lose fertility during the first 48 hours of storage, since frozen semen itself lost no fertility even though showing

as great a loss of apparent vitality. A light container for long-distance transportation of frozen semen was described.

JAKOBSEN, F. (1956). Some deep-freezing methods of bull semen and their influence on fertility results.—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 30-32. [French summary. Author's summary modified.] 276

Semen stored at  $-77^\circ\text{C}$ . for 6-21 days was used for the first inseminations of 752 cows and heifers. With variations of the methods of adding glycerol (little by little or all at once), of freezing (slowly or very quickly) and of distributing (in glass ampoules or in straws) the following results for an average of 30 ejaculates from 9 bulls were obtained: (1) Better conception results were consistently obtained by adding the glycerol at once rather than little by little; (2) Identical conception rates were obtained by both slow and very quick freezing methods for semen stored in straws 64.9% and 64.7% respectively; (3) Slow freezing of semen in glass ampoules and in straws gave similar conception rates (59.5% and 64.9% respectively).

MADDEN, D. H. L. (1956). An analysis of results obtained with frozen (bovine) semen. — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 33-36. [French summary. Author's summary modified.] 277

A conception rate of 60% was obtained in 30,785 first inseminations with deep-frozen semen from 33 bulls. The freezing technique was outlined with special reference to the freezing characteristics of different types of semen. The quality of the frozen semen was assessed by staining with eosin. The conception rate fell by 5.7% when fresh semen was kept for over 24 hours before use. All frozen semen was over 24 hours old at the time of freezing. There was no significant difference between the results from frozen semen and fresh semen over 24 hours old. Frozen semen over 2 months old gave poorer results than that used within 2 months.

DUNN, H. O. & HAFS, C. (1956). A study of variation in the numbers of live sperm surviving freezing and six months' storage at  $-79^\circ\text{C}$ . — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 37-39. [French summary. Authors' summary modified.] 278

The loss of live spermatozoa, in a theoretical full-scale frozen semen programme, was estimated to be 40-50% during freezing and stor-

age. The losses occurred through a lower dilution rate for frozen semen and the failure of 23 out of 123 ejaculates to meet the minimum requirements of live spermatozoa concentration per ampoule. There were highly significant differences between storage periods and among bulls and ejaculates. It is suggested that good bulls would be better utilized by the use of liquid semen.

LEIDL, W. (1956). **Experiments in freeze-drying of bull semen.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 39-41. [French summary. Author's summary modified.] **279**

Bull spermatozoa survived extensive dehydration during freeze-drying. The effect of dehydration on spermatozoa cannot be determined at present. Glycerol, which must be used in the freezing process, may have a toxic influence. Motile spermatozoa were not found unless reconstitution was carried out immediately after completion of the drying process. Removal or replacement of the glycerol after equilibration did not give any improvement.

HENDRIKSE, J., DE GROOT, B. & JANSEN, P. F. J. (1956). **A theory, the practical use and the estimation of deep frozen semen.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 22-27. [French summary. Authors' summary modified.] **280**

The protective action of glycerol is due to polarization of part of the bipolar water molecules. Polarization also takes place during the formation of ice crystals. In this way glycerol has a favourable influence on the quantity of ice and the character of the ice crystals. During freezing, influences can be shown which are specific for the bull concerned. Semen was cooled to 4°C. at the rate of 1° per min. and, after crystallization, at a speed of 5° to 10° per min. Two methods of cooling were compared: the addition, by hand, of solid carbon dioxide; and immersion in a cooling vessel [Polge and Lovelock (*V.B.* 23, 1733)]. Better survival of the spermatozoa and a better conception rate were obtained with the first method. The conception rate with frozen semen up to a year old was only 7% lower than that with ordinary diluted semen. There was a correlation between the fertility of the ordinary diluted semen and the deep-frozen semen of a bull, and also between the viability of the ordinary semen and the frozen semen of a bull.

BRUCE, W. (1956). **The application of the low temperature storage of bull semen for artificial insemination.**—*Proc. IIIrd Int. Congr.*

*Anim. Reprod., Cambridge*. Sect. III. pp. 27-29. [French summary. Author's summary modified.] **281**

The standard method used at Reading for the low temp. storage of bull semen is described. After equilibration of the diluted semen overnight at 5°C., the ampoules are filled and sealed at 5° C. and then frozen in a stirred alcohol bath by the addition of solid carbon dioxide. The freezing rate is 0.5°C. per min. from 5° to -10°C., to -16°C., in the next minute and then to -70°C. in a further 3 to 4 min. In 10,821 first inseminations over a period of 12 months a 16 weeks conception rate of 57.3% was obtained. No significant difference in fertility was found in a trial comparing the standard method with a dry freezing method in which the ampoules are frozen by covering with crushed solid carbon dioxide. When dilution rates 1:20 and 1:50 were compared there was no significant difference in fertility. A diluent containing dried skim milk and glycerol has proved satisfactory in a small field trial. There was no loss of fertilizing capacity of frozen semen after a storage period of 2 years.

CRESPO GARCÍA, J. (1956). **Determinación de los espermatozoides vivos y muertos del semen. [Determination of living and dead spermatozoa in semen.]**—*Rev. Patronato Biol. anim., Madrid*. 2, 23-51. **282**

Fixed preparations gave more reliable results than supravital staining. Best results were obtained with eosin and opal blue as described by Lasley *et al.* [*V.B.* 12, p. 606]. The author emphasized the necessity of care to avoid trauma, *e.g.* he rotated the test tube containing semen and stains gently between the palms of the hands in order to mix sample and stains: stirring with a glass rod causes trauma. In each sample a count of at least 200 spermatozoa distributed in two preparations should be made. In the semen of normal bulls, rams, and stallions the mean proportions of dead spermatozoa were 21%, 24%, and 14%. On mixing two consecutive ejaculates before dilution there was a marked increase in the percentage of dead spermatozoa. At the time of dilution the number of dead spermatozoa increased by 10%. The spermatozoa of stallions are much more resistant to the action of water than those of bulls or rams.—F.E.W.

DOTT, H. M. (1956). **Partial staining of spermatozoa in the nigrosin-eosin stain.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 42-43. [French summary. Author's summary modified.] **283**



Nigrosin-eosin was dissolved in distilled water or in sodium citrate at pH 6 and 8; three concentrations of sodium citrate were used. Bull, ram, boar and stallion spermatozoa were stained by these solutions. All stained in the same way. Each concentration of sodium produced a similar result. Spermatozoa were stained differently in stains of different pH. Fewer spermatozoa were stained by nigrosin-eosin dissolved in distilled water than in sodium citrate.

BARTLETT, D. E. (1956). **Health of bulls in artificial insemination.** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 73-76. [French summary. Author's summary modified.] 284

In the U.S.A. over five million cows are inseminated annually; about 2,500 bulls are used. A comprehensive code of health for bulls has been adopted by the industry. TB., brucellosis, trichomoniasis and vibriosis are receiving special attention. Leptospirosis may be transmissible by artificial insemination [see *V.B.* 26, 1552]. The use of frozen semen has not greatly affected the problem of trichomoniasis but has aggravated the problem of vibriosis. Nutrition, special clinical problems, and the effects of transport are discussed briefly.

COUTTIE, M. A. & HUNTER, W. K. (1956). **Sexual behaviour of Aberdeen Angus bulls.** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 98-100. [French summary. Authors' summary modified.] 285

Bulls of the Aberdeen Angus breed are reared so that as yearlings they are in excellent flesh and coat. They are allowed to suck until just before sale and this together with management factors tends to produce an asexual animal. A conditioning process is therefore necessary to bring the yearlings into breeding condition. This requires care and patience. A clinical examination of 125 yearlings is reviewed; 30 had poor testicular development, 14 had inguinal hernia and 2 had misplaced testicles. These abnormalities are probably genetic. In older bulls, prolapse of the prepuce, inguinal and scrotal hernia, and 5 cases of testicular regression are mentioned.

CROMBACH, J. J. M. L., DE ROVER, W. & DE GROOT, B. (1956). **The influence of preparation of dairy bulls on sperm production and fertility.** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 80-82. [French summary. Authors' summary modified.] 286

Experiments with identical twin bulls

showed that the quality of the semen was improved and its quantity increased by preparation of the bull before service. Preparation consisting of a restraining time of 5 min. and one loose mount caused the greatest improvement. The number of living spermatozoa in the first ejaculate of well-prepared bulls was about twice that in control bulls. Moreover the motility of the spermatozoa was better. The second ejaculate was also improved by preparation. The use of this method for 4 months brought about no decline in performance.

LENZ, H. (1956). **Mangelhaft bakterizide Wirkung von zwei Antibiotika-kombinationen im verdünnten Bullensamen. [Poor bactericidal effect of two combinations of antibiotics in diluted bull semen.]** — *Fortpflanzung*. 6, 65-69. [English summary.] 287

Mixtures of (1) supranal, penicillin and streptomycin and (2) penicillin, streptomycin and polymyxin, added to semen samples diluted with egg yolk-citrate and artificially infected with 4 strains each of *Corynebacterium pyogenes*, *Staphylococcus pyogenes*, *Pseudomonas pyocyanea*, *Brucella abortus* and *Vibrio fetus*, were not effectively bactericidal after 5 hours during which the semen was cooled from 20° to 5°C. and 5 hours' storage at 5°C.

—HUGH BOYD.

STRÖM, S. (1956). **Comparison of the effects of egg-yolk-citrate and egg-yolk-glycine diluents on the fertilizing ability of bovine semen.** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 71-72. [French summary. Abst. from author's summary.] 288

The conception rate was similar for both diluents. After storage for more than 50 hours, however, semen diluted in citrate proved to be 11% more fertile than that diluted in glycine.

MELROSE, D. R. (1956). **Skim milk powder as a semen diluent.** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 68-70. [French summary. Author's summary modified.] 289

A 9% skim milk powder diluent and a 3.6% sodium citrate-egg yolk diluent were compared, both diluents containing 500 units of streptomycin per ml. With skim milk diluent in 5,076 first inseminations a 16-week non-return conception rate of 68.4% was obtained whereas with egg yolk-citrate in 5,113 first inseminations the rate was 63.5%. The significantly higher rate with skim milk diluent was confined to certain bulls. In a second trial with 6,958 first inseminations

nations the conception rates with 500 or 1000 units of streptomycin per ml. of 9% skim milk powder diluent were similar.

KERRUISH, B. M. (1956). **A field-trial comparison of milk and egg-yolk citrate as semen diluters.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, Sect. III. pp 65-68. [French summary. Author's summary modified.] 290

4,637 first inseminations with semen diluted in heat-treated homogenized milk and 6,850 with semen in heat-treated skim milk were compared with 13,208 with semen diluted in egg-yolk-citrate. Homogenized milk appeared to have an unfavourable effect on viability of spermatozoa when storage was prolonged, but skim milk was beneficial in all circumstances, producing the best results of the three diluents. The low cost of skim milk and the favourable results both justify the decision to extend its use as a diluent.

BIELAŃSKI, W. (1956). **Results of extensive researches of the semen in stallions.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, Sect. III. pp 85-87. [French summary. Abst. from author's summary.] 291

A survey of state stallion studs in Poland covered 1,777 stallions in 1953, 1,995 in 1954 and 1,991 in 1955. The following average properties of semen were ascertained from samples from 1,710 stallions in 1955: volume of ejaculate 61.6 ml., initial motility 75-19%, survival time 37.79 hours at temperatures of 0° to 4°C. and survival index 12.59. Differences between breeds were negligible. The percentage of stallions whose semen was below standard in each year was respectively 4.2, 2.9 and 3.1. The usual diagnosis was low motility. In some cases this deficiency was permanent. Considerable variation was found in the morphology of the spermatozoa of 25 stallions with asthenospermia.

WALTON, A. & DOTT, H. M. (1956). **The aerobic metabolism of spermatozoa.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, Sect. I. pp. 33-35. [French summary. Authors' summary modified.] 292

Ram or bull semen was placed in cellophane tubes suspended in a constant slow stream of Krebs-Ringer-bicarbonate soln. saturated with 5% CO<sub>2</sub> + 95% O<sub>2</sub> or with 5% CO<sub>2</sub> + 95% N<sub>2</sub>. Activity was highest when fructose was present and the soln. was oxygenated; it was lower when either fructose or oxygen was omitted, although aerobic endogenous meta-

bolism could be maintained for a long time. Motility ceased when both fructose and oxygen were omitted but was resumed when either or both were added.

GLEW, G. (1956). **The metabolism of pyruvate in bull spermatozoa in relation to fertility.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, Sect. I. pp. 36-38. [French summary. Author's summary copied verbatim.] 293

Two hundred and ninety-one samples of semen from 74 dairy bulls were tested and graded according to the type of metabolic response under the experimental conditions described by Melrose & Turner (1953). Conception rates of bulls were obtained from the breeding records based on not less than 150 first inseminations. Since the mean conception rates of centres varied, the fertility of each bull was assessed in relation to the mean conception rate of the centre at which the bull was standing. A highly significant relationship ( $P < 0.001$ ) was found between the groups of metabolic responses and the fertility levels of the bulls. The practical application of the test in the assessment of the potential fertility of bulls is discussed.

WHITE, I. G. (1956). **The effect of some inorganic ions on mammalian spermatozoa.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*, Sect. I. pp. 23-25. [French summary. Author's summary copied verbatim.] 294

Potassium is important for the normal functioning of ram and bull spermatozoa. High concentrations are, however, toxic. The efficiency of the rarer alkali metals in replacing potassium increases with increasing atomic number, reaching an optimum with rubidium and falling off again with caesium. Magnesium may be necessary for the maintenance of the viability of bull spermatozoa. Calcium can depress motility. Copper and iron are the most consistently spermicidal of the common heavy metals, but there are large species differences and the effects are not always marked. Cadmium is quite toxic to human spermatozoa. The replacement of chloride and other ions by non-electrolytes may under certain circumstances improve the survival of mammalian sperm. High concentrations of phosphate inhibit motility and oxygen uptake, the latter being accompanied by an accumulation of lactic acid if a glycolysable substrate is present.

MANN, T. & ROWSON, L. E. A. (1956). **Effect of different planes of nutrition on the com-**



**position of bull semen.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 21-22. [French summary. Authors' summary modified.] **295**

The effect of nutrition on the onset of spermatogenesis and on the appearance of seminal fructose and citric acid was studied in identical twin bull-calves. In the twin maintained on a high plane of nutrition, seminal fructose and citric acid appeared at 6 months, and spermatozoa at about 9 months of age. In the twin maintained on a low plane of nutrition, there was a delay of nearly 4 months in the appearance of fructose and citric acid, and of one month in the appearance of first spermatozoa.

**LEATHEM, J. H. (1956). Nutritional and hormonal influences upon testis function.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 11-12 [French summary. Author's summary modified.] **296**

Protein depletion for one month did not abolish spermatogenesis in adult rats but decreased seminal vesicle weight and hypophyseal gonadotrophin content. Prolonged protein depletion was required to induce testis atrophy and reduce testis protein. In hypophysectomized rats testis function was maintained by androgen despite a protein-free diet but steroid effectiveness was reduced by protein depletion before hypophysectomy. Testis atrophy induced by stilboestrol was not influenced by dietary protein but recovery was correlated with protein nutrition.

**GLOVER, T. D. (1956). Studies on testicular thermo-regulation; the behaviour of spermatozoa in the epididymis following insulation of the scrotum of rams.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 108-109. [French summary. Author's summary modified.] **297**

During insulation of the scrotum there was a decrease in the number of spermatozoa per ejaculate and an increase in the proportion of dead and abnormal spermatozoa, when ejaculations were frequent. Recovery of the testes was not markedly affected by frequency of ejaculations, but the percentage of dead spermatozoa remained high for a longer period. Decapitation of spermatozoa was observed after scrotal insulation for 24 hours. This effect appeared some time after removal of insulation and was transient.

**LAKE, P. E. (1956). A retarding factor in the problem of fowl semen storage.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect.

III. pp. 104-106. [French summary. Author's summary modified.] **298**

In view of the structure and mode of erection of the copulatory organ of the cock, it is doubtful if the blood exudate of the engorged lymph folds and vascular bodies is a normal component of fowl semen. It is only obtained through squeezing the organ. Evidence is given which suggests that it is a factor contributing to the difficulty of storing fowl semen.

**AVERILL, R. L. W. (1956). The transfer and storage of sheep ova.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 7-9. [French summary. Author's summary copied *verbatim*.] **299**

Recent literature on egg transfer in several species, and on storage of rabbit eggs by cooling and deep freezing is reviewed. A report of experiments involving 115 transfers of fertilized eggs between sheep, and 13 transfers of sheep eggs to rabbits is given. While a few eggs survived transfers made between sheep in which oestrus commenced within a 96-hour period, optimal results (80% conception in 33 transfers) were obtained when the onset of oestrus lay within a 24-hour limit. The site of transfer of sheep eggs of different cell stages affected their ability to survive, but all stages from the two-cell to the six-day morula have developed following transfer under favourable conditions. The first successful attempts to store sheep ova for 24, 48 and 72 hours between 5°C. and 8°C. are reported. Sheep ova were irreversibly affected *in vitro* by exposure to rapid rates of cooling. The uses of *in vivo* storage of sheep ova in the rabbit reproductive tract are discussed.

**ADAMS, C. E. (1956). Egg transfer and fertility in the rabbit.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. III. pp. 5-6. [French summary. Author's summary modified.] **300**

The transfer of 583 eggs at the 2 to 32-cell stages of development to 96 recipients is described. The results are analysed with reference to the various factors affecting egg transfer, and to the fertility of the recipients under natural conditions. The successful *in vitro* culture of 2 to 16-cell eggs at 37°C. for 1-2 days is reported. The culture medium was Krebs-Ringer bicarbonate containing 0.2% bovine plasma albumin.

**HERMAN, H. A. (1956). Age-fertility relationships in cattle serviced by artificial insemination.**—*Proc. IIIrd Int. Congr. Anim. Reprod.,*

Cambridge. Sect. III. pp. 56-58. [French summary. Author's summary modified.] 301

Thirty-five centres furnished information on their experience with virgin heifers, and cows under and over 8 years old. Cattle of all ages (794,221) had a first service 60 to 90-day non-return rate of 72.12% with a range of 65.7-75.5%. The rate for virgin heifers (198,555) was 70.11%, for cows (476,333) under 8 years 73.22%, and for cows (119,133) over 8 years 68.7%. There was little evidence that differences were due to age. It is believed that disease and management were more important factors.

CROSS, B. A. (1956). **Hypothalamic control of contractile mechanisms in reproduction.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 72-74. [French summary. Author's summary modified.] 302

The effects of electrical stimulation of various parts of the hypothalamus on milk ejection and uterine activity in anaesthetized rabbits are described. Stimulation of the paraventricular and supraoptic nuclei, the median eminence or infundibular stem releases oxytocin from the neurohypophysis causing ejection of milk from cannulated teats of lactating rabbits and increased rhythmic contractions of the uterus of oestrous or spayed oestrogenized does. Stimulation of the dorsal, lateral and posterior areas of the hypothalamus evokes a sympathetic discharge and release of medullary adrenaline. This induces an initial contraction of the uterus followed by diminished activity, and the response of both the uterus and the mammary gland to injected oxytocin is inhibited. The uterus of the rabbit in lactation oestrus is unresponsive to endogenous or injected oxytocin, but it responds to stimulation of the sympathetic centres of the hypothalamus or to intravenous inj. of adrenaline. The significance of these two neuro-endocrine systems in mammary and uterine function is discussed.

ALEXANDER, G., McCANCE, I. & WATSON, R. H. (1956). **The relation of maternal nutrition to neonatal mortality in Merino lambs.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 5-7. [French summary. Authors' summary modified.] 303

Groups of ewes were put on different planes of nutrition during the last 1-6 weeks of pregnancy. In the case of ewes on the low plane the mean period of gestation was shorter and the milk yield, 6-8 hours after parturition, was lower; the rectal temperature of the lambs at birth was lower; the survival time of the lambs when fasted in a cooled draught of air was

shorter. The survival time of fasted lambs was directly related to the birth weight which varied directly with the nutrition of the ewes. At the terminal stage the blood sugar was low and fat stores were depleted in all lambs. There was no evidence of increased utilization of protein during fasting.

SMITH, E. P., DICKSON, W. M. & ERB, R. E. (1956). **Fluorimetric estimation of estrogens in bovine urine.**—*J. Dairy Sci.* 39, 162-170. [Authors' summary modified.] 304

An account of a chemical method of extracting and estimating oestrogen in the urine of cattle. With the urine of pregnant cattle, the total fluorescence given by this method increased with advance in pregnancy. Bioassay values on some of the samples indicated that about a quarter of the fluorescence was due to biologically active oestrogens. Further work on extraction and purification of the urine extracts and identification of the compounds contributing to the fluorescence is necessary to develop a satisfactory method for cow urine.

VOLFIN, P., CLAUSER, H. & GAUTHERON, D. (1956). Influence de l'oestradiol et de la progestérone sur les phosphates acidodissolubles de l'utérus de rat. [Influence of oestradiol and progesterone on the acid-soluble phosphates of the uterus of rats.] — *C. R. Acad. Sci. Paris*. 243, 522-524. 305

Treatment of sexually immature rats with oestradiol alone or combined with progesterone caused pronounced changes in the amount of acid-soluble phosphate fractions of the uterus. Ovariectomy of adult rats also altered the phosphate content of the uterus.—R.M.

WILTBANK, J. N., HAWK, H. W., KIDDER, H. E., BLACK, W. G., ULBERG, L. C. & CASIDA, L. E. (1956). **Effect of progesterone therapy on embryo survival in cows of lowered fertility.**—*J. Dairy Sci.* 39, 456-461. [Abst. from authors' summary.] 306

Of 36 repeat breeder cows injected with 50 mg. of progesterone daily, beginning 3 days after oestrus, 16 had normal embryos at 34 days as compared with 12 out of 36 uninjected controls. Of 31 other cows injected daily with 200 mg. progesterone, 12 had normal embryos at 34 days as compared with 8 out of 31 controls.

PALSSON, H. (1956). **Augmentation of fertility of Iceland ewes with pregnant-mare serum in successive years.** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I.



pp. 112-115. [French summary. Abst. from English summary.] 307

P.M.S. was injected on the 12th and 13th day of the oestrous cycle before service. In 2½-year-old ewes 750 i.u. caused a significant increase in multiple births; this increase was maintained after a second treatment the following year. In two ewes given 1,500 i.u. in the 3rd year and killed 8 days after service the average number of corpora lutea was 6.5. In 3½-year-old ewes 500 i.u. caused a significant increase in multiple births while 250 i.u. had no effect. In all treated ewes gestation was shorter, the birth weight of lambs being lower and lamb mortality higher than in controls. The number of lambs per treated ewe at weaning was higher.

CURRIE, E. J. (1956). **The influence of milk yield on fertility in dairy cattle.**—*J. Dairy Res.* 23, 301-304. [Author's summary copied verbatim.] 308

9,234 cows in 524 herds were divided into two groups in each herd, those holding to first service and those not holding to first service. The differences between the milk-yield means of each group in each herd were tested by an analysis of variance procedure, which showed no significant difference in milk production between the two fertility levels. It was also shown that the sample was homogeneous. The study shows that the amount of their milk yield during the month of service does not adversely affect the fertility of dairy cattle.

BLAIR, G. W. SCOTT & GLOVER, F. A. (1956). **Some physical properties of bovine cervical mucus and their bearing on problems of fertility.**—*Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge*. Sect. I. pp. 56-57. [French summary. Abst. from authors' conclusions.] 309

Rheological (flow) properties and ultra-violet and probably infra-red absorption spectra of cervical mucus can be used for practical diagnosis of oestrus and pregnancy, and for the study of at least two main types of sub-fertility, associated with extreme conditions in the balance of oestrogen and progesterone.

ARTHUR, G. H. (1956). **Some observations on infertility in cattle.**—*Brit. vet. J.* 112, 144-154. 310

A discussion of the causes of infertility in cattle.—T.E.G.R.

YAMAUCHI, M. (1956). **Etiologie et traitement des maladies de la reproduction, chez les**

bovins, à l'exception des maladies infectieuses. [**Non-infectious reproductive disorders of cattle.**]—*Bull. Off. int. Epiz.* 46, May. pp. 91-101. [English summary.] 311

A survey of reproductive disorders in dairy cows in Japan revealed that of 46,511 cows examined 3,825 were sterile. In the majority of cases sterility was due to ovarian dysfunction. Nutrition played an important part.—T.E.G.R.

CUPPS, P. T., LABEN, R. C. & MEAD, S. W. (1956). **Histology of the pituitaries, adrenals, ovaries, and uteri of dairy cattle associated with different reproductive conditions.**—*J. Dairy Sci.* 39, 155-161. [Authors' summary slightly modified.] 312

Histological studies of the pituitaries, adrenals, ovaries and uteri of cows exhibiting different types of reproductive failure indicated that some types of low fertility are associated with changes in these organs. In one type associated with irregular oestrous cycles, or absence of cycles, there was a decrease in the percentage of small beta cells and alpha cells in the pituitary. Changes in the adrenal gland consisted of a narrow fasciculata, a shrinkage of cells of the reticularis, and a high incidence of extramedullary myelopoiesis in the reticular zone of the gland. The ovaries were characterized by a high incidence of follicular atresia with faulty development of the follicle and corpus luteum. The endometrium of the uterus was thin, and in some cases the endometrial glands were enlarged and surrounded by a dense connective tissue.

Histologically, nymphomania was associated with two distinct conditions in the endocrine organs—one associated with an increase in the small beta cells of the pituitary, a hypertrophy of the fascicular zone of the adrenal, large numbers of follicles, and the absence of corpora lutea in the ovaries; the other characterized by hyaline degeneration of many of the small beta cells of the pituitary, the cells of the reticular zone of the adrenal being hypertrophied and the ovaries containing corpora lutea and lacking the large number of large follicles seen in the first type. In cows with nymphomania, the myelopoietic areas of the adrenal were seen more often in the glomerular zone. In two cows that showed no heat periods, the corpora lutea contained discrete areas of lymphoid cells, and the small beta cells were vacuolated or contained large inclusions similar to those seen in pregnant cows. The other organs from these animals appeared to be normal. During pregnancy, some of the small beta cells of the pituitary contained large inclusions or vacuoles.

PAYNE, J. M. (1956). **An experimental study of the reactions of the rat placenta to various kinds of injury.**—*J. Path. Bact.* **72**, 233-238. [Abst. from author's summary.] **313**

Local necrosis and polymorph infiltration followed injury to the placenta by the insertion of a linen thread or the application of heat. There was no formation of chronic inflammatory tissue, but in vascularized areas there was regeneration and replacement of the necrotic tissue by foetal capillaries.

LINDGREN, N. O. (1956). **Studies of salpingitis in the fowl. Preliminary report.**—*Nord. VetMed.* **8**, 348-350. [In English.] **314**

A disease of fowls which L. states is being increasingly diagnosed at P.M. examination in Sweden is characterized by a mucous, a caseous or, sometimes, a catarrhal exudate in the oviduct and is often complicated by a caseous peritonitis. The disease is said to have become as common a cause of death as lymphomatosis and now constitutes a serious problem in Sweden.

The author doubts whether it is a true inflammatory condition and doubts whether salpingitis is an accurate term for it. He inclines to the view that it is caused by some type of endocrine disturbance. It is said to occur most commonly in good layers. He comments on the paucity of references to the condition in the literature. [This is a short preliminary note so the description of the lesions is not very detailed, but one wonders whether L. is dealing with the so-called "egg peritonitis" of Gt. Britain.]

GRANT, H. T. (1956). **Underdeveloped mandible in a herd of Dairy Shorthorn cattle.**—*J. Hered.* **47**, 165-170. [Author's summary modified.] **315**

An account of 15 cases of underdeveloped mandible, and a comparison with similar abnormalities previously reported. The relationship between the affected cattle was traced, and the possible causes discussed.

CORNELIUS, C. E., TYLER, W. S. & GREGORY, P. W. (1956). **Chemical and hematological studies on blood of bovine dwarfs.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 522-524. [Authors' summary modified.] **316**

Serum proteins, calcium, magnesium, and phosphorus of 38 "short-headed" bovine dwarfs were all within normal limits. Serum cholesterol and protein-bound iodine levels were within the normal range and indicated that the "short-headed" bovine dwarf is not a primary thyroid

cretin. All haematological values appeared normal except for the differential w.b.c. count. Deviations from the normal were discussed.

BRASS, W. (1956). **Über die Osteochondrosis des Hundes. [Osteochondrosis in dogs.]—Tierärztl. Umsch.** **11**, 200-204. **317**

An account of osteochondrosis in the shoulder of a dog. The shoulder is much less commonly affected than the pelvis and hind leg. —HUGH BOYD.

TEIGE, J. (1956). **Kongenitale hemningsmissdannelser av de Müllerske ganger og sinus urogenitalis hos storfe. Med særlig henblik på aplasia segmentalis ductus Mülleri. [Congenital malformations of Müller's ducts and the urogenital sinus in cattle.]—Nord. VetMed.** **8**, 289-319. [In Danish. English and German summaries.] **318**

A review of the malformations of the Müllerian ducts and a detailed description of 26 cases are given. The malformations are classified segmentally as cranial, medial and caudal and sub-divided according to the anatomical appearance of the condition. Malformation of the sinus urogenitalis is mentioned.

—HUGH BOYD.

MORLEY, F. H. W. (1956). **Selection for economic characters in Australian Merino sheep. VII. Interactions between genotype and plane of nutrition.**—*Aust. J. agric. Res.* **7**, 140-146. **319**

Twenty-four groups of half-sib lambs were divided into two, and from 3 to 17 months of age half of each group was on a high plane of nutrition, the other half on a low plane. The mean body weights of the animals on the high and low planes were 103.4 and 72.9 lb. at 17 months. Mean greasy fleece weights were 13.2 and 9.4 lb., mean clean fleece weights 8.0 and 5.6 lb., and mean staple lengths 10.0 and 8.9 cm. There was no difference in percentage yield or crimps per inch.

Heritability, as measured by the within sire correlation, did not vary with plane of nutrition for any of the characters measured. Genotype-treatment interactions were not present for any of the fleece characters measured, nor for body weight at 6 months. Such interactions were, however, large and highly significant for body weight at 12 and 17 months.

These findings indicate that the opinions expressed by Hammond [*V.B.* **18**, 2090] are not universally applicable. Hammond stated that selection should take place under optimal



conditions. In the present results not only was the heritability value the same under both sets of conditions, but there was evidence that, for

body weight, performance on one plane of nutrition was not an indication of performance on another.—H. N. TURNER.

*See also absts.* 46–54 (brucellosis); 57–61 (vibriosis); 85 (trichomoniasis); 86 (pyometra and artificial insemination); 145 (effect of virus diseases and vaccination of dam on embryo and foetus); 222 (prenatal and neonatal death in foals); 324 (report, Milk Marketing Board).

## ZOOTECCHNY

ALLDEN, W. G. (1956). **Time of mating studies.**

—*J. Agric. S. Aust.* **59**, 337-342, 371, 410-417. **320**

This paper compares the productivity of three flocks each of 100 ewes (Border-Leicester × Merino) mated to Southdown rams for fat lamb production in the Mediterranean-type environment (winter rain, summer drought) of South Australia. The flocks were mated at different times—December 15–January 25 for the early, January 25–March 7 for the mid-season, and March 7 to April 17 for the late-mated flock. Observations were made in each of four years on the same ewes, each flock being maintained in a small “farm” of four paddocks.

The percentage of lambs born to ewes mated over the four years averaged 113 for the early, 136 for the mid-season, and 165 for the late-mated flocks respectively. The late-mated flock had fewer dry ewes (1% compared with 9 and 7 for the early and mid-season flocks), and a higher percentage of twin births (67% compared with 24 and 46). These differences are not related to the nutritional status of the ewe at mating, but possibly to the effect on the ewe of changing physical factors of the environment.

Growth rates were greater for single lambs than twins, and for males than females. The growth rates in the late-mated and mid-season flocks were in general higher than in the early-

mated flock, but the mean slaughter weights and gradings were slightly lower for the late-mated flock than the other two. The proportion of “carry over” lambs failing to reach slaughter weight was also slightly higher in the late-mated group in some years, while topping of the pastures in the late spring has been necessary on the late-mated “farm” to delay pasture maturity and prevent grass-seed injury.

The amounts of supplementary feed consumed per ewe in the three flocks (mean over 4 years) were 51, 39, and 33 lb. starch equivalents respectively. There was no significant difference in wool output per acre, in spite of the large difference in lambing percentages. The actual figures for wool output per acre (4-year totals) were 115, 116 and 115 lb. respectively for the early, mid-season and late-mated flocks. The meat outputs per acre for lamb carcasses (4-year totals) were 400, 465 and 483 lb. respectively, the money return for carcasses (excluding “carry over” lambs and skins) being £A1120, £A1288 and £A1372.

The usual joining time for the district is December. The author concludes that the results reported indicate that a later joining (either the “mid-season” or the “late” in the flocks observed) results in a greater return per acre, with reduced management problems and supplementary feed consumption.

—H. N. TURNER.

## TECHNIQUE AND APPARATUS

MCARTHUR, J. (1956). **A new form of dark-ground illumination.**—*Trans. R. Soc. trop. Med. Hyg.* **50**, 311. **321**

A modified microscope incorporates a pre-focused and pre-centred illuminator in which light can be provided by mercury cells or by a small transformer for working off mains. It is capable of high power bright or dark field illumination, or for projection on to a screen from high power objectives. The entire apparatus measures 4 × 3½ × 2 inches.—T.E.G.R.

WEAVER, R. G. & BOWMAN, W. J. (1956). **A simple and effective movement-restricting collar.**—*Nature, Lond.* **178**, 367-368. **322**

The collar, the object of which is to prevent the dog from interfering with flank operation sites, is cut out of 18-gauge aluminium and has a long flange which extends over the scapula on the side to be protected. Felt or sponge rubber is sewn on the inside through small holes 1–1½ inches apart and 1 inch from the edge. The ends, having 4 holes each, overlap and are laced together with cord. The collar is held in position by means of a chest band.—T.E.G.R.

## REPORTS

GREAT BRITAIN. (1956). **The Lister Institute of Preventive Medicine. Report of the Governing Body 1956.** pp. 22. London: The Institute. 323

In continued studies with the vole bacillus *Mycobacterium tuberculosis* var. *muris*, little difference was found between vaccines prepared in liquid media and those grown on the routine solid medium. Amino-acid metabolism of the vole bacillus was investigated for the preparation of semi-synthetic liquid medium. Asparagine, commonly used for *M. tuberculosis*, induced a pronounced lag in growth of the vole bacillus and was converted to aspartic and glutamic acids, the latter being more important for the vole bacillus. Freeze-dried vaccines were produced experimentally. Reconstitution of completely dried material produced some clumping and granular suspensions. This change occurred by the time drying was complete.

Antigenic analysis of the two serological varieties of *Trichomonas foetus* by the Ouchterlony precipitin technique in agar gels were continued: at least five recognizable antigenic components were present. Antigen fractions of various species of *Tetrahymena*, and of single strains and mating types of these ciliates grown under different conditions, are also being analysed by gel diffusion methods.

Distribution of antibody in the serum proteins was studied by titration of bacterial agglutinating antibody in mammalian sera. It was found that the naturally occurring agglutinins to *Salmonella* are present in the gamma globulin fraction (G3) of human sera, but in the G2 fraction of the sera of sheep and some other animals, which contains predominantly a mixture of alpha and beta globulins. In joint studies with workers at the Institute of Animal Physiology, Oxford, on the distribution of artificially induced bacterial agglutinins in sheep: the sera of sheep receiving six doses of *Salmonella* vaccine did not change in electrophoretic pattern either during the course of immunization or for six months thereafter; and during this period the naturally occurring agglutinin was consistently in the alpha and beta fraction, and the induced "immune" agglutinin was present in this and in the gamma globulin fraction as well.

Serological identification of blood ingested by tsetse flies continued. A comprehensive study of natural feeding habits of tsetse flies was made. The technique of identification of ingested blood (Report 1954, 1955) has proved

reliable and specific even for the blood of closely related animals. Species of tsetse studied were *Glossina morsitans*, *G. swynnertoni*, *G. pallidipes*, *G. palpalis*, *G. brevipalpis*, *G. austeni* and *G. longipennis*. Each species has characteristic feeding habits which in some instances may be due to differences in their habitat. Thus the riverine species *G. palpalis* feeds largely on reptiles but also on birds and some mammals which come to drink. The savannah species (*G. morsitans* and *G. swynnertoni*) depend on wart-hog for half of their food supply and also on rhinoceros and elephant but not often on birds, monkeys and baboons. *G. pallidipes* feeds chiefly on bushbuck (*Tragelaphus scriptus*). In Zanzibar *G. austeni* feeds mainly on bushpig (*Potamochoerus koiripotamus*). None of the flies fed on hartebeest (*Alcelaphus buselaphus*), topi (*Damaliscus korrigum*), wildebeest (*Gorgon taurinus*), or zebra (*Equus burchellii*); although in some localities zebra and hartebeest were very numerous and readily available. Similarly impala (*Aepyceros melampus*), thought to be the main source of food, provided only 0.8% of the feeds of *G. morsitans* even though there were large herds in one area. Further studies are being made on the digestion of the serum proteins by flies which have been fed on different hosts. The understanding of feeding habits is of great importance to fly ecologists and in work on the transmission of trypanosomes from game to domestic animals or man.

—J. A. GRIFFITHS.

GREAT BRITAIN. (1956). **Milk Marketing Board. Report of the Production Division.** pp. 118.

Thames Ditton: The Board. 324

The number of cows artificially inseminated in the year 1955/56 increased to 1,279,000, representing 55% of the total number of cows artificially inseminated in England and Wales. The greatest demand was still for Friesian semen, followed in order by Dairy Shorthorn, Hereford, Ayrshire, Aberdeen Angus, Guernsey, Devon and Jersey. The staff of the artificial insemination service totalled 792, including 17 veterinary officers.

In the spring of 1955 the incidence of HYPOMAGNEAEMIA in cows was studied. There were 228 cases on 140 (4.9%) of the farms visited, an overall incidence of 0.6% of all female cattle. In the areas sampled it varied from nil to 3%, being highest in the south. There was a survey of the incidence of clinical SUMMER MASTITIS in about 8,000 herds. An average of 0.21% of all female cattle were affected in June,



0.58% in July, 0.99% in August and 0.36% in September.

The advantages of the deep-freeze method of storing semen were discussed: some centres rely entirely on this method. The use of blood groups for confirming the parentage of cattle was being studied. The report contains an account of the histology of the testes and epididymis of 10 bulls, in relation to the semen picture before slaughter.—J. A. GRIFFITHS.

CANADA. (1956). **Department of Agriculture. Report of the Veterinary Director General for the year ended March 31, 1955.** [WELLS, K. F.] pp. 31. Ottawa: Edmond Cloutier. 325

Although no serious outbreaks of livestock disease occurred during the fiscal year 1954-55, many investigations were carried out with regard to conditions suspected of being of a reportable nature. One case of ANTHRAX and one outbreak of SCRAPIE were reported. Horse MANGE was reported on two premises and cattle mange on 33 premises. RABIES continued to be a problem, occurring mainly in wild animals, particularly foxes, in the northern part of the country. Large areas were under quarantine and extensive programmes of dog vaccination were carried out. Of 3,296 herds comprising 94,419 cattle in a voluntary control scheme for BRUCELLOSIS (Brucellosis-Free Listed Herd Regulations, 1947) 2,649 herds have been free listed; 582,002 calves were vaccinated with Strain 19 during the year. Under the Restricted Area Plan 2,079,072 tuberculin tests were conducted during the year and 3,947 reactors were found. NEWCASTLE DISEASE has diminished considerably, and although it is still listed as a scheduled disease, it was not found necessary to invoke the slaughter policy during the year. One outbreak of FOWL TYPHOID was controlled by slaughter of the affected birds.

Other activities included control of swill feeding, inspection of stock cars and trucks and control and inspection of veterinary vaccines and sera and of imported semen. During the year there was an increased demand for Federal Meat Inspection service.—A. GREIG.

BASUTOLAND. (1956). **Annual Report of the Department of Agriculture, 1955.** pp. 67. Morija, Basutoland: Morija Printing Works. [Items of veterinary interest pp. 18-22.] 326

ANTHRAX was diagnosed in 5 animals and all in-contact cattle were vaccinated. There were 42 outbreaks of BLACKLEG and the demand for vaccine amounted to 15,100 doses. Several outbreaks of STRANGLES occurred, but there was no mortality. FOWL TYPHOID caused heavy

losses. Several cases of ANAPLASMOSIS and PIROPLASMOSIS were encountered in cattle, one death being recorded. The incidence of *Babesia* infection in horses and dogs was high; there was no mortality and aureomycin was considered effective in the treatment of the condition in horses. LUMPY SKIN DISEASE made its appearance towards the end of the year, 12 cases being diagnosed. AFRICAN HORSESICKNESS, in a peracute form, assumed epizootic proportions; several inoculated horses developed the infection and two died. The disease was diagnosed also in mules, two of which died. BLUETONGUE caused some losses among sheep. Heavy losses from WORM INFESTATION, especially in sheep, were recorded. RAGWORT POISONING caused a number of deaths among horses. TULIP POISONING and PRUSSIC ACID POISONING caused some mortality among sheep.—T.E.G.R.

ZANZIBAR PROTECTORATE, (1956). **Annual Report of the Department of Agriculture, 1955.** [BRIANT, A. K.] pp. 31. Zanzibar: Government Printer. 2s. 327

There were outbreaks of RINDERPEST, ANTHRAX and FOOT AND MOUTH DISEASE, introduced by cattle imported for slaughter; F. & M. DISEASE spread to dairies in the vicinity of the quarantine and halved the milk supply for a month. The slaughter policy was not in operation and no adult cattle died, but some never regained their milk yield and were subsequently slaughtered. The virus was of type O. A later outbreak at Dar es Salaam was caused by type A.

The ANTHRAX occurred in a shipment of 68 sheep and goats from Tanga. Within two days 11 died, the remainder being promptly slaughtered and buried within the station.

TRYPANOSOMIASIS was not serious during the period. Dipping for EAST COAST FEVER was unacceptable to the majority of the cattle-owners other than the commercial dairymen who supply Zanzibar town with milk. Where spraying facilities existed, however, there was a better response. A dog dip was constructed at Wete and 88 dogs were dipped in November and December.

Clinical treatment was given to 5,588 sick animals at Zanzibar and 3,138 in Pemba. —D. S. RABAGLIATI.

U.S.A. (1955). **Report of the New York State Veterinary College at Cornell University for the year 1954-55.** pp. 112. Ithaca, New York: The College. 328

There are 19 Professors (9 in Pathology), 7 Associate Professors, 5 Assistant Professors,



15 Assistants and 29 special visiting lecturers. In September 1955, 196 undergraduate students registered, including 15 women; 47 men and one woman graduated. The field staff consists of a Supervisor and 7 field Veterinarians with 5 Directors of Laboratories (one Mastitis and 4 Poultry).

Animals treated at the clinics were 44,317 (excluding poultry). The main increase was in cattle. The decreases were in horses, pigs and dogs.

Extension activities include addresses to meetings of veterinary practitioners and farmers, demonstrations and the issue of pamphlets, etc., to veterinarians; radio and television programmes; short courses for over 400 veterinarians; free consultation service for veterinary practitioners; diagnostic laboratories in Ithaca and seven other centres to assist veterinary practitioners and farmers.

The Diagnostic Laboratory examined 752 suspected cases of rabies of which 304 were positive. Of the total of examinations made (170,806), 166,737 were for brucellosis agglutination tests.

Abstracts are given of research work in progress, published and unpublished: the pub-

lished papers of interest have been dealt with in this Bulletin.—J. A. GRIFFITHS.

U.S.A. (1956). **Annual Report, Part I of the University of Wisconsin. What's new in farm science.** [POWERS, R. D. & SORESENSEN, D. D. (Compiled by.)] *Bull. Univ. Wis. agric. Exp. Sta.* No. 518, pp. 60 329

Under the heading "Health in Livestock and Poultry" reports are given on research on bovine contagious abortion vaccine; a bigger lamb crop; safe spray oils; vaccine tests; swine diseases; calf scour; mastitis; parasites; and some poultry diseases.

It has been found that a small amount of zinc in pig rations will reduce the risk of parakeratosis, a skin disease which has been prevalent of late. High calcium feeds aggravate the condition.

It has been estimated that a pig could gain 6 oz. more daily if it was free from worms. From 71 pig carcasses examined at random at an abattoir, 24,016 parasitic worms were recovered—an average of 338 per pig.

A new piperazine compound has proved to be better than phenothiazine and is safe for pigs of all ages, even in large doses.

—D. S. RABAGLIATI.

## BOOK REVIEW

FINCHER, M. G., GIBBONS, W. J., MAYER, K. & PARK, S. E. [Edited by:] (1956). **Diseases of cattle.** pp. xvii+752. Illinois: American Veterinary Publications, Inc. \$16.50. 330

This encyclopaedic work, described as a text and reference work, is a collection of articles by 57 American authors, dealing with every aspect of diseases of cattle, as they occur in North America. Tropical diseases such as trypanosomiasis, heartwater and three-day fever are not included, but there is a good account of rinderpest. Subjects are arranged under each of the body systems and under various types of causal agent. The principal aim of the authors has been to review recent developments and to discuss therapy. In many cases the literature cited is scanty and almost exclusively American.

The subject index—a vital part of this sort

of book—is well done, but would be more suited for rapid reference if the page number of the main reference to a given subject were in bold type, for it is not uncommon to find an entry followed by six or more page numbers, only one of which refers to the subject in detail. The statement on p. 286 that "there are no immunological tests" for trichomoniasis is surprising, because the vaginal mucus test is widely used in Great Britain and Europe; this test was only later applied to vibriosis, which use is described on p. 295.

These minor criticisms are not intended to detract from the general excellence of the book. It is handsomely printed, illustrated and bound, and will be of great value to the practising veterinary surgeon. It is possibly too detailed and certainly too expensive for veterinary students, but would find constant use in the library of their college or faculty.—R.M.



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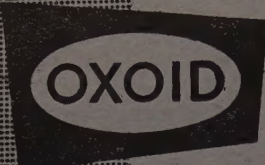
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